THE ROLE OF BUTTER PRODUCTION AND MARKETING IN THE LIVELIHOOD OF RURAL COMMUNITIES IN KUCHA WOREDA OF GAMO GOFA ZONE, SNNPR

FIKRU HAILEGIORGIS AYZA

A THESIS SUBMITTED TO CENTER FOR RURAL DEVELOPMENT STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER'S OF ARTS IN DEVELOPMENT STUDIES (RURAL LIVELIHOOD AND DEVELOPMENT).

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This is to certify that the thesis prepared by Fikru Hailegiorgis, entitled the role of butter production and marketing in the livelihood of rural communities in Kucha Woreda of Gamo Gofa zone, SNNPR in partial fulfillment of the requirements for the degree of Master's of Arts in Development Studies (Rural Livelihood And Development) compiles with the regulation of the university and meets the accepted standards with respect to originality and quality.

Signed By the Examining Committees;

Internal Examiner

Degefa Tolossa (PhD) Signature _____ Date 27/06/2012

External Examiner

Abeje Birhanu (PhD) Signature _____ Date _____

Advisor

Bamlak Alamirew (PhD) Signature _____ Date 26/06/2012

Chair of Department or Graduate Program

Biography of the Author

Born on 11th of May 1986 in Arbaminch town to his father Hailegiorgis Ayza and his mother Shelemu Chal'ebo, the author is the third among the seven siblings (three brothers and three sisters) in the family. However, he spent most of his childhood in Selamber town, Kucha Woreda, Gamo Goffa Zone, SNNPR, where his parents currently live. He attended primary and secondary education in Selamber Primary and Selamber Intermediate Secondary Schools, respectively, and preparatory education in Arbaminch Comprehensive Secondary and Preparatory School. He joined, then, University of Gondar in January 2004 and studied his First Degree in Geography and Environmental Studies until his graduation in July 2006.

Until he went to Addis Ababa University to pursue his Master's Degree program in Rural Livelihood and Development in August 2010, he worked in various governmental and non-governmental organizations for a total of four years as Health Programs Planning, Monitoring and Evaluation Expert in Kucha Woreda Health Office, Program Coordinator of Community Vision Ethiopia-Kucha Project Office, and Coordinator of the Global Fund HIV/AIDS- Kucha Woreda Program.

To end with, the author is married to Mekdes Endale, a B.A. Degree graduate from Arbaminch University in English Language and Literature in 2010, and has got a baby girl whilst the data collection of this thesis was being conducted, which made him hold a fatherhood status on February 12, 2012.

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Figures

Acronyms

BoFED	Bureau of Finance and Economic Development
BPM	Butter Production and Marketing
CBO	Community Based Organizations
COSAER	Commission of Sustainable Agriculture & Environmental Rehabilitation
CSA	Central Statistical Authority
DA	Development Agents
EDRI	Ethiopian Development Research Institute
EEC	European Economic Community
ETB	Ethiopian Birr
FAO	Food and Agricultural Organization
FBO	Faith Based Organizations
FCS	Food Consumption Score
FEWS NET	Famine Early Warning System Network
FGD	Focus Group Discussion
FTC	Farmer Training Centers
G.C	Gregorian Calendar
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HABP	Household Asset Building Program
IFAD	International Find for Agricultural Development
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
MDG	Millennium Development Goals

MzNP	Maze National Park
NBE	National Bank of Ethiopia
NGO	Non-Governmental Organization
PLC	Private Limited Companies
PSNP	Productive Safety Nets Program
SDDP	Smallholder Dairy Development Projects
SERA	Strengthening Emergency Response Abilities
SNNPR	Southern Nations Nationalities and Peoples Region
SNV	Netherlands Development Organization
SPSS	Statistical Package for Social Science
TLU	Tropical Livestock Unit
USAID	United States Agency for International Development
WFP	World Food Program

CHAPTER ONE

INTRODUCTION

1.1. Background

Market-oriented development of smallholder dairy in developing economies is an important pathway out of rural poverty and it could be a powerful tool for sustainable rural livelihood improvement (Bennett et al. 2006). An efficient, integrated and responsive market mechanism that is marked with good performance is of crucial importance for optimal allocation of resources in agriculture and for stimulating producer to increase output (Jones, 1972; FAO, 1999) Therefore, without having favorable marketing conditions, the possible increment in output, incomes, and foreign exchange earnings resulting from the introduction of improved production technologies could not be realized.

Ethiopia needs to achieve accelerated agricultural development along a sustainable commercialization path to alleviate poverty and ensure overall national development. The country has the largest livestock population in Africa (CSA, 2012). Livestock play vital roles in the Ethiopian economy, and are the source of traction power, food, fuel and manure. They are source of income for the rural population to purchase basic needs and agricultural inputs, and come only second to coffee in foreign exchange earnings.

Kucha is known for its high quality butter produce, however despite this huge potential, neither the smallholder producers nor other several marketing agents have been benefited from this opportunity. The absence of any other notable research in the area, the existing high demand for the butter produced from the area and the existing poverty in the area were the main motives of the researcher.

1.2. Statement of the Problem

Livestock contribute 40 percent of the global value of agricultural output and support the livelihoods and food security of almost a billion people. The livestock sector is one of the fastest growing parts of the agricultural economy, driven by income growth and supported by technological and structural change. The growth and transformation of the sector offer opportunities for agricultural development, poverty reduction and food security gains (FAO, 2009).

The major dairy exporting countries of the world are those of the EEC, USA, Canada, Australia and New Zealand, with the EEC and New Zealand dominating. Africa, despite its huge livestock population, accounts for a little over 2% of the world's milk production. As compared with the continent's potential, the current performance of the dairy sector is extremely low (Brokken et al, 1992).

Ethiopia holds large potential for dairy development. The country currently manages the largest TLU in Africa with 52.13 million cattle, 46.8 million sheep and goats, 1 million camels, 8.73 million equines and 44.89 million poultry (CSA, 2012). The sector plays a vital role in the overall development of the country's economy. According to the report, the total milk production from about 10 million milking cows is estimated at about 3.33 billion liters, an average of 1.54 liters per cow per day over a lactation period of about 6 months. Ethiopia has a huge untapped potential for market-oriented development of smallholder dairy production. The agro-ecology, particularly of the Ethiopian highland mixed crop–livestock systems, is considered conducive and relatively disease-free to support crossbred dairy cattle (Ahmed et al. 2004).

The contribution of livestock and livestock products to the Ethiopia's agricultural economy is significant. Recent figures indicate that the livestock sector contributes about 16% of national GDP, 40% of agricultural GDP, 14% of export earnings and 30% of agricultural employment. Livestock contribute to the livelihoods of 60-70% of the population. Smallholder farmers represent about 85% of the population and are responsible for 98% of the milk production (SNV, 2008). Productivity however is relatively low, quality feeds are difficult to obtain and support services are inadequate, (NBE, 2009).

In terms of quantities consumed and traded, local butter is by far the most popular dairy product in Kucha Woreda. It is produced and consumed in almost all households and tastes extremely strong and distinct flavor, a feature valued by consumers in southern, south western and central parts of the country. Local fresh butter is also sold as a cosmetic to be rubbed into the hair. Kucha is home for the 'famous' and the 'so called' the butter of Kucha, and the name "Kucha, *Kibe be Wancha*" literally "Kucha is the Pot of Butter" is used to indicate its immense potential to produce high quantity and butter (*Quca Shica* Magazine, 2009). However, regardless of this potential and recognition, neither smallholder producers nor other several marketing agents like rural assemblers, retailers, wholesalers and hotels and restaurants have been benefited from this opportunity. No other notable research or publication on the butter production and marketing in Kucha has been conducted so far. In order to fill this gap and for progressive development of the sector so as to improve the livelihood of smallholder butter producers, investigation of the role of butter production and marketing in the livelihood of smallholders became an important task. Therefore, in line with the market-oriented production strategy of the country's policy and to realize the successful attainments of both MDG, the GTP, the study was intended at bridging

the information gap and suggest possible areas of intervention for policy and decision makers to improve its role in the livelihood of producers and traders in Kucha Woreda of SNNPR.

In order to identify factors affecting the performance of the dairy production and marketing activities of smallholders thereby suggest possible intervention strategies, evidence-based studies are vital. However, most studies conducted so far focused on supply chain analysis like Woldemichael, (2008), who analyzed the dairy marketing chains in Hawassa, Shashemane and Yergalem milk shed in southern Ethiopia. His findings identify that milk and butter market in the study area seemed to be inefficient and underdeveloped. Thus, dairy development interventions should be aimed at addressing both dairy production technological gaps and marketing problems. However, his work gave attention to milk marketing and had a little focus on the major derivative of dairy products, cooking butter and also treated urban and peri-urban milk production with a significant focus on crossbred milking cows. Holloway et.al. (2002) analyzed factors affecting volume of milk supply and milk market entry decision by dairy households in the highlands of Lemu Ariya, Arsi and Shoa using Probit and Tobit models. Their findings indicated that number of cross breed and local breed dairy cows owned, education level of the household head, and number of extension visits exhibited positive relationship with milk market entry decisions and marketed milk surplus. But they failed to take the importance of dairy household's access to credit service, market information service, income source and demographic factors of the dairy household into consideration in the study. Embaye (2010) studied the analysis of butter supply chain in Atsbi-Wemberta and Alamata Woredas of Tigray region with the objective of investigating the butter supply chain in the above Woredas. According to his findings, significant factors that affect market participation

are the quantity produced, market information access, family size, distance to nearest market and distance to development center. His study is fairly related to my study but did not include indigenous production, value addition and preservations techniques which my research discussed.

Most of the works of others on the same topic gave a heavy emphasis on marketing and value chain analysis, but in this study in addition to butter marketing systems, included indigenous production, value addition and preservation techniques and further extended to include its role in empowering the economic capacity of women and their collective role in ensuring food security at a household and community level.

1.3. Objectives of the Research

The general objective of the study is to explore the butter production and marketing in Kucha Woreda on its role to rural community livelihood. The specific objectives through which the general objective can be achieved are to:

1. identify the major problems affecting butter production and marketing in Kucha,
2. examine the level of market integration of households and,
3. explore indigenous butter production, value adding and preservation techniques.

1.4. Research Questions

The main research question that this thesis is going to answer is how the role of butter production and marketing on the rural community livelihood in Kucha is explained? And specific components of the research question are:

1. What are the major factors affecting production and marketing of butter?
2. What is the degree of commercialization level of butter producers in the study area?
3. How efficient are the current production systems in the study area and what factors explain their efficiency?
4. What are the indigenous butter production, value addition and preservation techniques used in Kucha?
5. How could butter production and marketing contribute to women economic empowerment, ensuring food security at a household and community level?
6. What needs to be done in order to improve and sustain the livelihoods of smallholder producers, itinerant traders and satisfy the needs of consumers?

1.5. Scope and Delimitation of the Study

The entire parts of this research were conducted in Kucha Woreda of Gamo Gofa Zone, SNNP Regional State. So it was conducted, in average, 508 km distance from Addis Ababa. Concerning the limits of the study, it will fall within the boundaries of livelihood in terms of income, food security and women economic empowerment. Issues such as production and marketing techniques were treated under the boundaries of this study in their role and contribution to the existing livelihood strategies and outcomes.

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1.6. Limitations of the Study

During the data collection process, the researcher encountered a range of problems. One of the few limitations of this study is its lower emphasis on utilization of sophisticated marketing models to fully analyze the marketing system in the locality and the absence of scientific studies such as laboratory experiments to prove the speculations of specialty of the butter of Kucha, which was constrained by the budget and time available. Other problems were associated with farmers' recalling capacity, attitude of being suspicious and aid expectation, since farmers do not keep records their income expenditure and the information needed the collected data is very much dependent on their ability to remember what they did some days before alone. Hence, it is difficult to believe that all information given by respondent farmers is correct. To minimize the problem, the interview was conducted in the presence of the most knowledgeable members of the family.

Suspiciousness of farmers to tell the right information especially with regard to their annual production, marketable surplus, and land size because of fear of taxation., The other notable limitation is the participation of government Development Agents in the data collection process, this had left some space for bias, as all of them want to overestimate the levels of production and other activities which were directly related to their performance. Triangulation of replies from different members of the households had carefully been registered to minimize the possibility of biases.

Despite these shortcomings, the researcher tried his best to minimize the expected gaps in the interpretations of this work. Relevant and sufficient amount and type of data have been gathered and analyses have been made prudently

1.7. Significance of the Research

As mentioned earlier sections, the overall purpose of this research was to generate basic information and baseline data for further studies that will be conducted in the specific topic and study area. However, given the broadness of the topic under discussion and its need of indepth scrutiny, the researcher was not confined to generating basic information alone, but side by side the study uncovered a variety of issues and truths.

No research or survey on the topic and in the study area was conducted so far. Therefore this research is the first in its kind and is the primary effort by the researcher. The work also will serve as a reference document for researchers to embark on studies of the same or related kinds in both the study area and other parts of the country.

The findings of this study will also be useful to the population in the study area in general and smallholder butter producer, tinerant traders and consumers in particular were the primary targets and beneficiaries of the outcome of the research which will help them to make informed decisions. Finally, this research would help policy makers and other development and likeminded actors as a tool for decision makers and in designing appropriate policies for intervention. Above all, it will help the governmental and NGOs that are engaged in the development of livestock sub-sector would benefit from the results of this study providing a deeper understanding in helping their effort to attaining both the MDG and the GTP.

1.8. Organization of the Paper

This thesis is organized in six chapters. The first chapter deals about the basic components of the thesis like statement of the problem, objectives and research questions. The second chapter is about literature review, which includes the overview of butter production and marketing in Ethiopia and analytical framework. The third chapter is concerned about description of the study area, Kucha Woreda; it briefly discusses the physical, economic and demographic features of the Woreda. The fourth chapter shows the research design and methodology how the whole study is conducted, it clarifies the target and sample population, sample size, models employed, primary and secondary data collection techniques. The fifth chapter depicts the findings and discusses the results of the study, the last and the sixth chapter concludes and recommends the policy implications.

CHAPTER TWO

LITERATURE REVIEW

Definitions of Basic Terms and Concepts

I. **Livelihood-** USAID FEWSNET defines livelihood as the sum of ways in which households make ends meet from year to year, and how they survive (or fail to survive) through difficult times. Specifically for this research livelihoods are the ways people make a living, including how they distribute their productive resources and the types of activities in which they are engaged.

II. **Households-** A household may be either;

- A one person household, that is a person who makes provision for his own food or other essentials for living without combining with any other person to form part of a multi person household or
- A multi person household, that is, a group of two or more persons who live together and make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to greater or lesser extent. They may be related or unrelated persons or a combination of both (CSA, 2011/12).

III. **Holding-** a holding is all the land and/or livestock kept, which is used wholly or partly for agricultural production and is operated as one legal entity by one person alone, or with others without regard to management, organization, size or location. While a holder is a person who exercises management control over the operation of the agricultural holding and makes the major decision regarding the utilization of the available resources (ibid).

2.1. Major Forms of Dairy Production in Ethiopia

Ethiopian traditional fermented milk products include: *Ergo* (naturally fermented milk); traditional butter, *Arera* (defatted sour milk); *Ayib* (Ethiopian cottage cheese) and *Aguat* (whey). Milk container vessels used for milk souring and/or churning in different parts of the country include: clay pot, calabash, woven grass or plant fiber vessels and hollowed wood vessels. These containers are covered using a piece of skin, hide, plastic or plant leaves during storage/souring and/or churning (Zelalem, Undated).

Smallholder butter-making in Ethiopia is based on sour milk mainly due to high ambient temperature, small quantities of daily milk production, and longer keeping quality of sour milk. About 21 liters of whole milk is needed to produce a kilogram of butter (83% total solids) with average churning time of 187 minutes. In Ethiopia three types of butter can be distinguished namely *Lega, Mekakelegna* and *Besal*, which refer to fresh, semi-rancid and rancid, respectively, based on the degree of lipolysis that had undergone due to a number of factors such as age of the product. With the objective of extending its shelf-life, butter is cooked at around 100°C until the moisture content is almost completely evaporated. In the process, spices such as garlic and ginger are added to improve its flavor. The resultant product is called *nitir kibie* (for melted and clarified butter or ghee) that can be stored for quite a long time at ambient temperature. Butter has additional functions besides its nutritional value. Women put butter on top of their head, which is assumed to have dual functions as hairdressing and to cure headaches. Ghee is added is a variety of Ethiopian traditional dishes: in *Kitifo* (minced beef served raw or half cooked) and a variety of cereal, pulse and meat based sauces. Ghee is also consumed with coffee and tea (ibid).

2.2. Marketing Agents

There is no universally accepted definition of marketing. Kohl (1968), defined marketing in a way that is most applicable to this study. Accordingly: Marketing is the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until they are in the hands of ultimate consumers. The main actors in a marketing channel according to Kohl are:

- **Producers:** The first link in the butter supply chain. The producer harvests the products and supplies to the second agent. From the moment he/she decides what to produce, how much to grow and when to grow and sale.
- **Consumers:** The last link in the supply chain. The participants and their respective functions often overlap. The most widespread combinations are traders-wholesalers that collect the commodity and supply it to retailers to consumer.
- **Rural assembler:** Sometimes called transporter or trader, that is the first link between producer and other middle men
- **Wholesaler**: Concentrates the various, intermediate sized loads and puts the product into large, uniform units. These activities all contribute to price formation.
- **Retailers**: Middlemen, which include super markets and other large-scale retailers who divide large shipments of produce and sell it to consumers in small units. The basic function of that they provide is bulk breaking.

2.3. Overview of the Dairy Sector in Ethiopia

2.3.1. Production and Marketing Systems

Livestock is raised in all of the farming systems of Ethiopia by pastoralists, agro-pastoralists, and crop-livestock farmers. Following Redda (2001), milk production systems can be broadly categorized into urban, peri-urban and rural milk production systems, based on location (Table 1). Both the urban and peri-urban systems are located near or in proximity of Addis Ababa and regional towns and take the advantage of the urban markets. The urban milk system consists of 5,167 small, medium and large dairy farms producing about 35 million liters of milk annually. Of the total urban milk production, 73 % is sold, 10% is left for household consumption, 9.4 % goes to calves and 7.6 % is processed into butter and *ayib* (cheese). In terms of marketing, 71% of the producers sell milk directly to consumers (Redda, 2001). The peri-urban milk system includes smallholder and commercial dairy farmers in the proximity of Addis Ababa and other regional towns. This sector controls most of the country's improved dairy stock.

The rural dairy system is part of the subsistence farming system and includes pastoralists, agro-pastoralist, and mixed crop-livestock producers mainly in the highland areas. The system is non-market oriented and most of the milk produced in this system is retained for home consumption (Figure 1). The level of milk surplus is determined by the demand for milk by the household and its neighbors, the potential to produce milk in terms of the herd size and production season, and access to a nearby market.

The dairy sector in Ethiopia can also be categorized based on market orientation, scale, and production intensity. Doing so identifies three major production systems: traditional smallholders, privatized state farms, and urban and peri-urban systems

(Gebre Wold, et al., 2000). The traditional smallholder system, roughly corresponding to the rural milk production system described above, produces 97 percent of the total national milk production and 75 percent of the commercial milk production. This sector is largely dependent on indigenous breeds of low productivity native zebu cattle, which produce about 400-680 kg of milk /cow per lactation period. The state dairy farms, now being privatized or in the process of privatization, use grade animals (those with more than 87.5% exotic blood) and are concentrated within 100 km distance around Addis Ababa. The urban and peri-urban milk production system, the third production system, includes small and large private farms in urban and peri-urban areas concentrated in the central highland plateaus (Felleke and Geda, 2001). This sector is commercial and mainly based on the use of grade and crossbred animals that have the potential to produce 1120-2500 liters over a 279-day lactation. This production system is now expanding in the highlands among mixed crop-livestock farmers, such as those found in Selale and Holetta, and serves as the major milk supplier to the urban market (Gebre wold et al., 2000; Holloway et al., 2000).

Table 1- Structure of Demand for Milk Products in Ethiopia, 2000

Milk Products	Households (Percentage)			
	Rural	Peri-Urban	Urban	Total
Raw Milk Consumed By Calves	32%	13%	9%	32%
Raw Milk Consumed By Humans				
Farm Households	15%	8%	10%	15%
Marketed	2%	59%	61%	4%
Butter	41%	20%	8%	40%
Cheese	9%			9%
Pasteurized Milk	1%	0%	12%	1%
Total Milk Equivalent Volume				
Percent	100%	100%	100%	100%
Millions Of Liters	1115	15	20	1135

Sources: Fellke and Geda (2001), Gebre Wold et al., (2000), and Redda (2001).

2.3.2. Consumption Patterns

Milk and milk products form part of the diet for many Ethiopians. They consume dairy products either as fresh milk or in fermented or soured form. Fellke and Geda (2001) estimated that 68% of the total milk produced is used for human consumption in the form of fresh milk, butter, cheese and yogurt while the rest is given to calves and wasted in the process. Butter produced from whole milk is estimated to have 65% fat and is the most widely consumed milk product in Ethiopia (Table 1). Of the total milk produced, around 40 percent is allocated for butter while only 9 % is for cheese. Traditional butter, which ferments slowly at room temperature, can keep for a year or longer, offering rural consumers a readily storable, long-lived dairy product

The consumption of milk and milk products vary geographically between the highlands and the low lands and level of urbanization. In the lowlands, all segments of the population consume dairy products while in the highlands major consumers include primarily children and some vulnerable groups of women. The limited statistical data available on potential milk demand suggest that demand for milk will increase, at least in the urban centers and among the people with high purchasing power.

2.3.3. Smallholder Participation in the Dairy Market

Enhancing the ability of poor smallholder farmers to reach markets and actively engage in them, poses a pressing development challenge. Difficult market access restricts opportunities for income generation. Remoteness results in reduced farm-gate prices increased input costs and lower returns to labor and capital. This, in turn, reduces incentives to participate in economic transactions and results in subsistent rather than market-oriented production systems. Sparsely populated rural areas, remoteness from towns and high transport costs all pose physical barriers impeding

market access. Transaction costs such as lack of information about markets, lack of negotiating skills, and lack of collective organization are other impediments to market access. The question of how to expand the market participation of smallholder livestock producers is a major challenge facing many governments and NGOs in developing countries.

Figure 1- Distribution of Cross-Bred Heifers in Ethiopia

Sources: Fellke and Geda (2001), Gebre Wold et al., (2000), and Redda (2001).

Market access poses a key bottleneck to the expansion of smallholder milk production and processing. The cost of milk production in Ethiopia is low but transaction costs are high, preventing dairy export for the moment. Milk groups, when developed further, could serve as basis for development of producer-oriented processing that better integrates smallholder producers with the Ethiopian dairy markets and with the global agro-industry.

B. **Economic growth**: For the past five years ending 2007/08, Ethiopian economy registered an average real GDP of 11.8%. The economic growth will contribute in increasing the leaving conditions and purchasing capabilities of the people. Rapid growth of many cities contributes for increasing the demand for dairy products (MoFED 2008). Mainly Because of the impact of the Global economic slowdown IMF projected that 2009's Ethiopian Growth rate will not exceed 7%.

C. **Conducive Business Environment**: Many private investors are now engaged in dairy farm development and dairy product processing. Currently there are about seven dairy processors and a number of dairy farms in Ethiopia. In the socialist regime, private Supermarkets were small in number and little known had small significance. All public owned supermarkets are now privatized except two merchandise store and duty free store. Currently there are about 70 Supermarkets in Addis Ababa, where few of them are with more than two chains. Big towns other than Addis Ababa have similarly 3 to 6 super markets. These supermarkets are among the main distribution channel of the products of the dairy industry, both the local and the imported one. In addition to the supermarkets, with the expansion of Addis Ababa, many village shops and kiosks are opened and are among the primary active distributers of dairy products.

D. **Increased foreign Community** because of the increasing in the size and number of international organization in Ethiopia, foreign investments and continuing public investments. These trigger more demands for dairy products.

E. **Foreign Investment**: investment policies and other supports attract foreign investors in the sector. Though few in number, foreign investors are engaged in dairy farm and milk processing business.

F. Its steady character as a quick income and **involvement by most poor population**: Involvement on milk production due to its monetary nature and, though in small amount its steady income to cover expenses at household level it is highly regarded farm business in peri-urban areas. It is also the most important business in urban areas and involves more people than any other farm.

2.6. Key Constraints

2.6.1. Feed Constraints

Inadequate supply of quality feed and the low productivity of the endogenous cattle breeds are the major factors limiting dairy productivity in Ethiopia. Feed, usually based on fodder and grass, are either not available in sufficient quantities due to fluctuating weather conditions or when available are of poor nutritional quality.

These constraints result in low milk and meat yields, high mortality of young stock, longer parturition intervals, and low animal weights (McIntire et. al., 1992, p. 103). Improved nutrition through adoption of sown forage and better crop residue management can substantially raise livestock productivity.

2.6.2. Genetic Improvement

Unlike Kenya, the large cattle population of Ethiopia has relatively limited numbers of exotic dairy cattle and their crosses. Less than 1 percent of the 34.5 million cattle populations of Ethiopia are exotic or crossbred dairy cows (Muriuki and Thorpe, 2001). Although it was difficult to trace the ownership of improved dairy animals, it is estimated that state and private farms own a total of 128,745 grade and pure female dairy animals of which the small holders sector owns 32,204 crosses and improved female dairy cattle. However, due to dissolution of producer's cooperatives and privatization of state farms, most of the crossbreed cows are currently owned by private individuals residing in peri-urban and urban areas of the country (Felleke and

Geda, 2001). Consequently, milk productivity in Ethiopia is low. The indigenous zebu breed produces about 400-680 kg of milk/cow per lactation period compared to grade animals that have the potential to produce 1,120-2,500 liters over a 279-day lactation.

2.7. Analytical Framework

Based on the objectives of this study, it is possible to conceptualize the whole study in four basic components. Assessment of factors that affect butter production and marketing system, the subsequent increase of household income, improvement of women economic power and the gross outcome on improving the household food security.

The Analytical Framework depicted on figure 2 can further be elaborated as follows:

- Marketing butter stimulates its production, raise incomes and living standards, and create employment in rural areas. In general marketing functions are critical to rural and as well as to urban food security.
- Household income would increase as a result of improved butter production and efficient marketing systems which could further empower women economic capacity because they are dominantly involved in production and marketing of dairy products in Kucha and increases in income could guarantee them to better decide on the income at the end of the day and this at last would end up in food security at household and community level.
- Poverty Reduction is the overall outcome of improved household income, women economic power and food security at a household and community level, as a result of the upgraded butter production and marketing system
    - *Poverty is both the cause and outcome of poor butter production and marketing system and further hampers its role to the livelihood improvement of smallholder farmers in rural areas.*

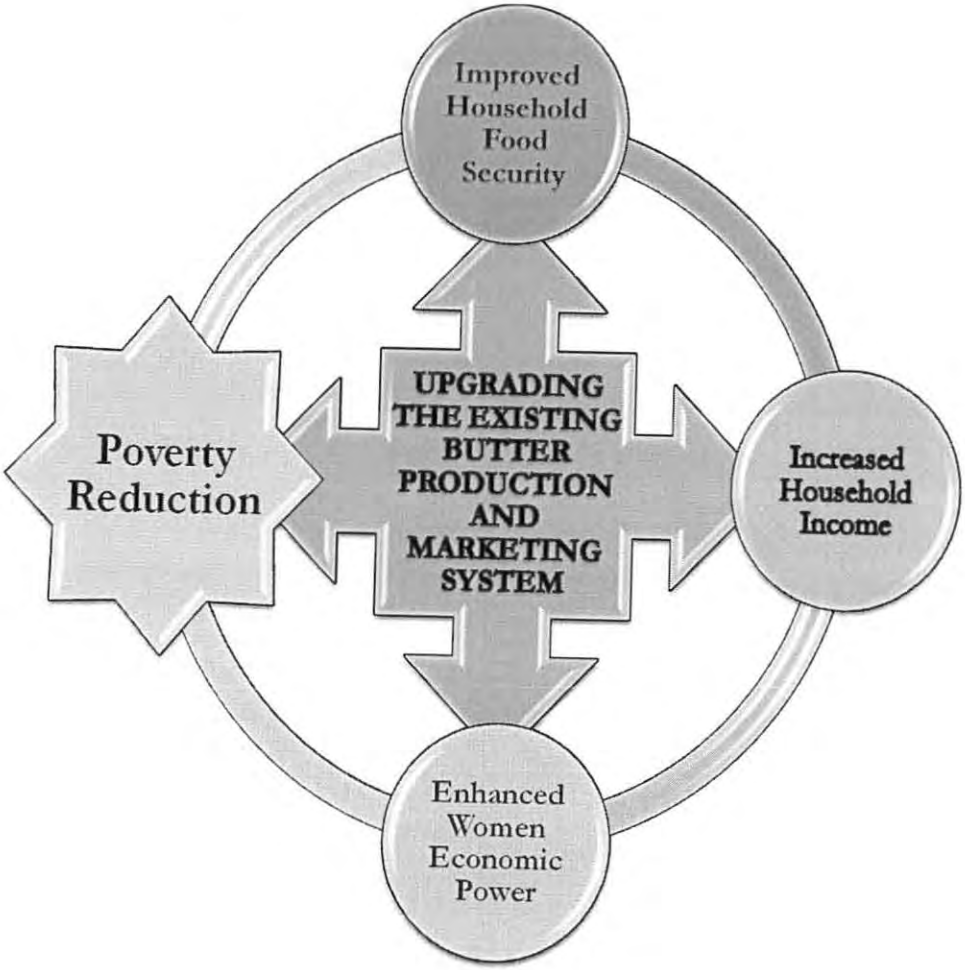


Figure 2- Analytical Framework of the Role of BPM to the Household Livelihood Improvement

CHAPTER THREE

DESCRIPTION OF THE STUDY AREA

3.1. Physical Features

Kucha is one of the 15 Woredas of Gamo Goffa Zone, in the Southern Nations, Nationalities and Peoples' Region. It is roughly situated between 6^0 05" N–6^0 30"N Latitude & 37^0 17"E– 37^0 40"E Longitude (SERA 2000). The 2011/12 Semi-annual Report of Kucha Woreda Health office reveals that the Woreda borders Kindo Didaye, Kindo Koysha and Offa Woredas of Wolayta zone in the North and North East, Loma Bossa Woreda of Dawro zone in the West, Demba Gofa, Zala, Daramalo, Dita, Chencha and Boroda Woredas of Gamo Gofa Zone in the West, South West South and East. The overall altitude of the Woreda varies between 1000-2250 meters above sea level. The total area is 1391.90 km^2 (CSA, 2011/12) which is divided into two traditional agro-climatic zones namely: mid highland (*Gezze)* and lowland *(Gara)* accounting for 50.6% and 49.4% of the total area respectively. Most of the area is found in the Omo Gibe drainage basin.

According to the information obtained from the Woreda Office of Agricultural Development, 20% of the topography is flat whereas 35% is steep to gentle slope. Mountainous areas and gorges represent 35% & 10% respectively. The overall feature of the terrain is higher at the center and the altitude decreases towards northeast & southwest. Black soils represent 50% of the total area while red soils occupy 30%, followed by brown & grey soils, which are estimated to account for 10% each. On the other hand, the Regional Atlas (BOFED, 1991) indicates that Orthic Acrisols that has high organic matter is a dominant soil type in Kucha. Dytric Nitosols, having a clay loam texture & red color occupy the southern portion of the Woreda. The latter is well

drained in character and potentially promising for agriculture. The mean annual rainfall varies between 1100 mm – 1600 mm whereas the mean monthly temperature ranges between 20.1^0C–25^0C. Meteorological records reveal that the rainfall pattern in Kucha is bimodal which is characterized by two production seasons, traditionally known as Belg and Meher. The Belg rains usually occur within the months of February/March–May whereas Meher takes place from June to November/December. Currently, there are three meteorological stations in the Woreda. These are stations in Dinke, Dana 2 and Morka. Selamber, the Woreda center is the only town in Kucha and located 450 kms south of Addis Ababa. There are 32 Kebeles and one resettlement site.

3.2. Natural Resources

The information from the Woreda office of Agriculture indicates that 95,009 hectares or 68.6% of the total area is arable land. However, only 29.9% of this is occupied by seasonal and perennial crops in 2011/12 production year. The livestock resource and its bi-products are characteristic features of Kucha's resource base. *"Ye Kucha Kibe"*, meaning butter from Kucha is the name given to high quality butter in the southern and central parts of the country. Butter is a source of cash income for quite a significant proportion of the people. The CSA Agricultural Sample survey of 2011/12 indicates that the Woreda has around 9% of the cattle population found in Gamo Gofa Zone. The current livestock density is *86.5* per square kilometer. The reconnaissance survey made by the Regional COSAER reveals that there are 11 rivers with irrigation potential of 11870 hectares. These include Deme, Domba, Kulano, Kurtume, Lemase, Daho Woshe, Mogola Were. Some of them share between neighboring Woredas because of their location at boundary lines. With respect to suitability for crop production, the whole Woreda is categorized as adequate for long duration crops.

Data from the ZDA (1991) further reveals that there is 10,000 hectares of natural forest and 300 hectares of plantation forest in Kucha which together account for 7.4% of the total area. Bush land and Shrub land are the dominant vegetation cover. Most parts of Kucha are under the cereal system while few areas towards the southeast are under the Enset system.

3.3. Population and Culture

Data on population size prior to the first census was difficult to obtain. According to the 1976 census, the total population of Kucha was 74,226, in the second census (1987) however, the population has reached to 102,598 and in third national census which was conducted in the 2007, the total figure was 149,835 This shows an overall population increase of 38.2% between the first and the second census periods and 46% increase between the second and the third censuses. According to the 2011/12 CSA annual estimate, the total population of the Woreda is 171,498, with 85,263 males and 86,235 females of which 6,934 or a little over 4% is an urban dweller, living in Selamber Town. According to the CSA 2011/12 population estimate, the crude density of Kucha is 102 persons per square kilometer. According to Kucha Woreda Health office, in 2011/12 there are 35,148 households in 2011/12 of which 15.1 % were female-headed. Female headship rate is higher in urban (22.6%) than rural (15%).

Table 2 Population and area at the federal, regional, zonal and Woreda

Label	Admin. Level	Total Population	Male	Female	Area km^2	Density person/ km^2
Ethiopia	Country	84,320,987	42,556,999	41,763,988	1,100,000	76.7
SNNPR	Region	17,359,008	8,640,005	8,719,003	105,887.18	163.9
Gamo Goffa	Zone	1,851,892	922,683	929,209	11,010.99	168.2
Kucha	Woreda	171,498	85,263	86,235	1391.90	123.2

Source- CSA, 2012

3.4. Economic Characteristics

3.4.1. Agriculture

Since 96.0% of the population is rural, mixed agriculture is the main economic activity. Although the main source of livelihood is crop production, livestock is also raised side by side as additional source of income, consumption of the bi-products and is kept as an asset for periods of stress. Major crops grown in Kucha include maize, sorghum, haricot bean, Teff, and root crops, such as sweet potato and ground nuts. Enset and coffee are also grown around homestead. Hoe and oxen are used complementarily as a means of ploughing and the use of animal manure is a common practice exercised to maintain soil fertility. The agricultural practice is primarily rainfed. Small-scale irrigation is confined to the catchments of two rivers (Domba and Deme). Kucha is known to its production deficit for many years. Attributive factors for the low agricultural output include shortage and erratic nature of the rainfall, backwardness of farm implements, low use of modern inputs, and increasing soil infertility. According to the data obtained from the Woreda office of Agricultural Development, the five major crops in order of importance are maize, sorghum, haricot bean, sweet potato and Teff. Maize by far is the major crop in terms of area coverage and it is the staple crop of the area.

3.4.2. Livestock Resource

In sedentary agriculture, households raise livestock for a multitude of reasons among which the supply of oxen as a traction power, income generation from its sale and the consumption of its bi-products are worth mentioning. Accordingly, Kucha is known with its livestock resource and its bi products especially butter. Despite the prevalence of livestock disease, drought and increasing reduction in grazing land, the data above reveals an overall increase in livestock population in the reference periods. The recorded growth rate was 4.8% in 1989, 8.2% in 1990 and 2.1% in 1991 as compared to their preceding years. The ratio of ox and cow to every agricultural household is just half an ox and nearly one cow in 1991. This shows the scarcity of a traction power and relative adequacy of cows in Kucha.

In 1991, cattle account for 83.2% of all the livestock population while shoats (sheep and goats) and equine represents 16.0% and 4.4% respectively. The overall ratio of livestock per person (0.7) indicates thc relative good position of Kucha and the significance of livestock in the life of the people. In animal husbandry what greatly matters is the breed of the livestock. Virtually, all the livestock breeds mentioned above are the indigenous type, which are known to their low productivity as compared to the hybrid or improved breeds. The average productivity for local cattle bread is 135 kg per head and 1.2 liters per day /cow. No effort has so far been made to introduce improved livestock breeds to the area.

The amount of grazing land per livestock head has been reduced from 0.48 to 0.41 hectare between 1988 and 1991. Since this is the ratio of gross grazing land to the total livestock population at Woreda level, there is shortage of pasture in the mid highlands where the population density is relatively higher. In terms of the livestock carrying capacity (the degree of livestock pressure on the carrying capacity of the land to support the livestock population), Kucha's current status is below the carrying capacity (BOPED, 1991).The other critical challenge in animal husbandry is the prevalence of livestock disease. Infectious diseases (CBPP, CCPP, Black leg, Anthrax, etc), external and internal parasites and Trypanosome by far are the major diseases in the area.

Table 3 the livestock data of the Nation, region, zone and the Woreda

Label	Cattle	Sheep	Goats	Horses	Donkeys	Mules	Poultry	Bee Hives
Ethiopia	52,129,017	24,221,384	22,613,105	1,961,949	6,438,435	368,781	44,893,009	4,993,815
SNNPR	10,437,409	3,865,819	3,506,210	376,402	521,257	74,131	7,690,931	779,235
Gamo Goffa Zone	1,308,815	493,259	301,418	33,633	44,477	12,834	775,071	49,655
Kucha Woreda[2]	120,464	24,404	3,880	38	1598	332	65,539	8,606

Source- CSA, 2011/12

[2] The Livestock data of Kucha Woreda is obtained from the Woreda office of Agriculture, Animal Production and Health Core Process, but the rest is from CSA 2011/12

Figure 3- Map of SNNP Region

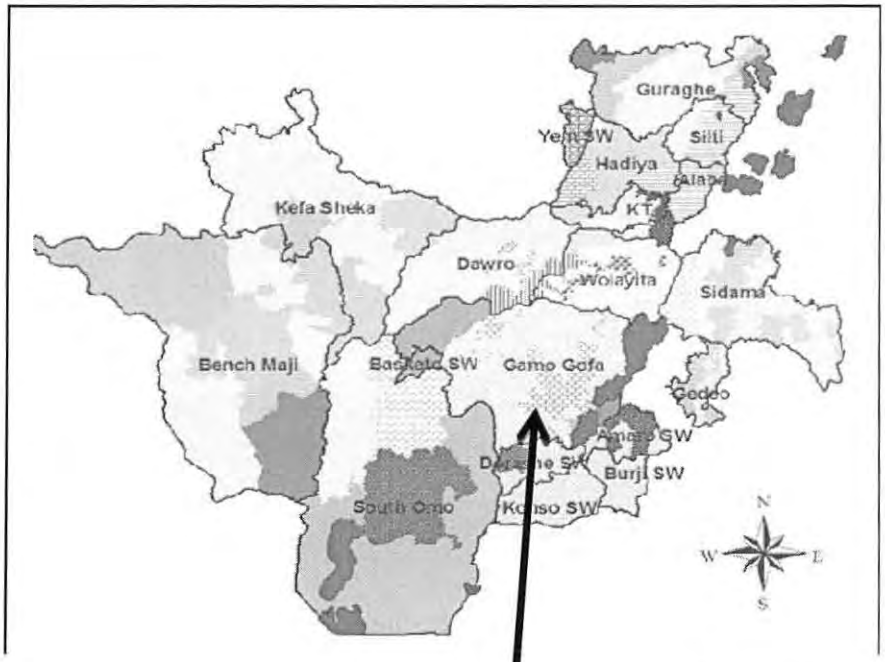
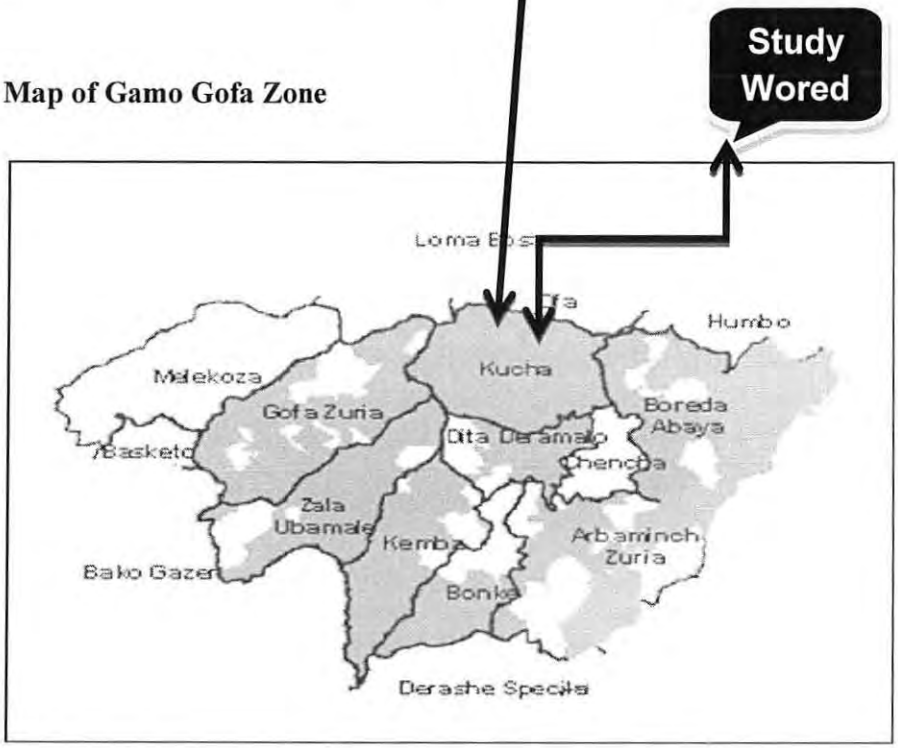


Figure 4- Map of Gamo Gofa Zone



Source- SNNPR BoFED website- http://www.snnprbofed.gov.et/, 2009

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1. Sources and Data Requirements

The study is mainly a kind of descriptive and exploratory research. It uncovered the necessary information and generated basic data which were not studied so far. Both primary and secondary data were utilized in this study. The primary data was collected using three different types of structured questionnaires to producers, local and urban butter traders, focus group discussion, case study and an experiment. Secondary data has also been used in this study in the form of extensive internet search; relevant literatures were reviewed from other surveys and thesis, evaluations, and project reports.

4.1.1. Focus Group Discussion

A Woreda level focus group discussion between 15 individuals who are practitioners and officials of the dairy sector, public institutions, non-governmental organizations, experts of the offices of Agricultural, Cooperatives and Trade and Industry, Women's Affairs, Omo Microfinance Institution, and butter producers and traders had participated. Basic Themes of the Focus Group Discussion is attached under the annex section.

4.1.2. Questionnaires

Structured questionnaires both with closed and open ended questions were used to collect data from butter producers, traders mostly with in the Woreda and some outside of it. It had four basic sections, general information, butter production and marketing activities, food security and problems and solutions and carefully designed to include all the necessary information required for this study. The questionnaire is also attached under the annex section on page 84.

4.1.3. Sampling Procedure and Size

Based on the information known, time and resource, accessibility to and openness of the butter producers and marketing participants themselves, as well as the estimated size of trading population, the sample size of targets of this research was decided. A total of 200 sampling units were selected for this study. Different types of sampling procedures were applied in order to minimize bias and sampling error.

To calculate sample size, the simplified formula for proportions as Yamane (1967:886) provides, was used. A 95% confidence level and a precision of (e) ±7%, because of the homogeneity of butter producing and marketing households in the Woreda. The total households of the Woreda are about 30,000, according to the 2010/11 annual report of the Woreda Health Office.

$$n = \frac{N}{1 + N(e)^2}$$

Where N= the total households of the Woreda, 30,000

e= the precision level, ±7%

Inserting the data in to the formula, we get, n=200, the other important point is the absence of clear boundary between butter producers and traders in other words these groups are not mutually exclusive. That means most producers sell their product in the market, so they can also be counted as trader in addition to those of pure traders. These characteristics should also be represented in the sample size selection. Three clusters are selected based on their distance from the Woreda main administrative and economic center, Selamber that is nearer, middle and further.

4.1.4. Method of Data Analysis

The study used proper mixed approach in which both qualitative and quantitative methods and techniques of data analysis were made. Descriptive statistics was used to analyze the collected data from butter producers and traders. So that it was depicted in charts, graphs, summary tables, the correlation between dependent and independent variables was quantitatively analyzed. Moreover, the whole data collection, analysis, presentation was carried out both manually and assisted with computerized softwares such as SPSS and Microsoft Excel.

4.2. Specific Methods Employed

a) **Market Participation-** Economists have generally treated the household's decision to participate in markets as a two-step process: first, producing households decide whether to participate (buying or selling) or remain autarkic, then, conditional on participation, how much to buy or sell (Goetz, 1992; Key et. al., 2000; Holloway et. al, 2001; Bellmare and Barrett, 2006; others cited in William J, 2009.). However, when considering a market such as dairy in Ethiopia, it is important to first acknowledge that not all households will be producers. This makes it important to add a third stage of analysis to the traditional 2 stage MP model that identifies factors influencing a household's decision whether or not to produce.

   - Marketing participation (Yes, No) and the amount of sale in the market was examined using Heckman Selection model. Commercialization index was used to determine how much of the production is being taken to the market.

b) **Butter Commercialization Index-** BCI is defined as the proportion of a household's butter production that is marketed

BCI = [gross value of butter sales /gross value of total butter production]* 100

This index measures the extent to which household butter production is oriented toward the market (Strasberg, et. .al, 1999 cited in William J, 2009). A value of zero would signify a totally subsistence-oriented household; the closer the index is to 100, the higher the degree of commercialization. The index captures the variation in terms of the intensity of butter commercialization across the sample by cluster

- Productivity of the current production system was analyzed using the Data Envelopment Analysis/DEA/ model Crosstabs were used to compare means (in asset holding, income etc)

c) **WFP Food consumption Score-** The FCS is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. Information is collected from a country specific list of food items and food groups. The interviewee is asked about frequency of consumption (in days) over a recall period of the past 7 days (WFP, 2008).

Food items are grouped into 8 standard food groups with a maximum value of 7 days/week. The consumption frequency of each food groups multiplied by an assigned weight that is based on its nutrient content. Those values are then summed obtaining the Food Consumption Score (FCS).

$$FCS = ax_{staple} + ax_{pulse} + ax_{vegetable} + ax_{fruit} + ax_{animal} + ax_{sugar} + ax_{dairy} + ax_{oil}$$

Where, FCS Food Consumption Score

x frequencies of food consumption= number of days for which each food group was consumed during the past 7 days (7days was designed as the maximum value of the sum of the frequencies of the different food items belonging to the same food group)

a weight of each group

Food Groups and Weights

Table 4 Food Consumption Score for Food Items and Groups

S/no	Food Items	Food Groups	Weight
1.	Maize/Maize porridge, sorghum, bread and other cereals	Cereals and tubers	2
2.	Cassava, potatoes, sweet potatoes		
3.	Beans, peas and ground nuts	Pulses	3
4.	Vegetables and leaves	Vegetables	1
5.	Fruits	Fruits	1
6.	Beef, goats, poultry, egg and fish	Meat and fish	4
7.	Milk yoghurt and others	Milk	4
8.	Sugar and sugar products	Sugar	0.5
9.	Oils and fats	Oil	0.5
10.	Condiments	condiments	0

Table 5- The Typical Thresholds

Threshold	Profiles	Thresholds with oil and sugar eaten on a daily basis
0-21	Poor Food Consumption	0-28
21.5-35	Boarderline Food Consumption	28.5-42
>35	Acceptable Food Consumption	>42

Source- For tables 4&5 WFP – FAO, 2008

4.3. The Selection Criteria

The selection of Kebeles followed the pattern of traditional peak market days. so that in Kucha all days of the week exhibit peak market in different parts of the Woreda, except Sunday, which is left for rest according to the tradition of the people. Now there are six Kebeles, but purposively four Kebeles were added to those with the wider um lands they serve. Almost all the 32 Kebeles of the Woreda fall under these six marketing channels.

a) Morka Monday Peak market- Masha Chaba, Kodo Wono and Morka Kebeles

b) Selamber Tuesday Peak Market- Baso and Fango Kebeles

c) Mogola Wednesday Peak market- Gale Kebele

d) Chaba Thursday peak market – Chaba Wonbi

e) Chosho Friday- peak market day- Kaske Genze Kebele

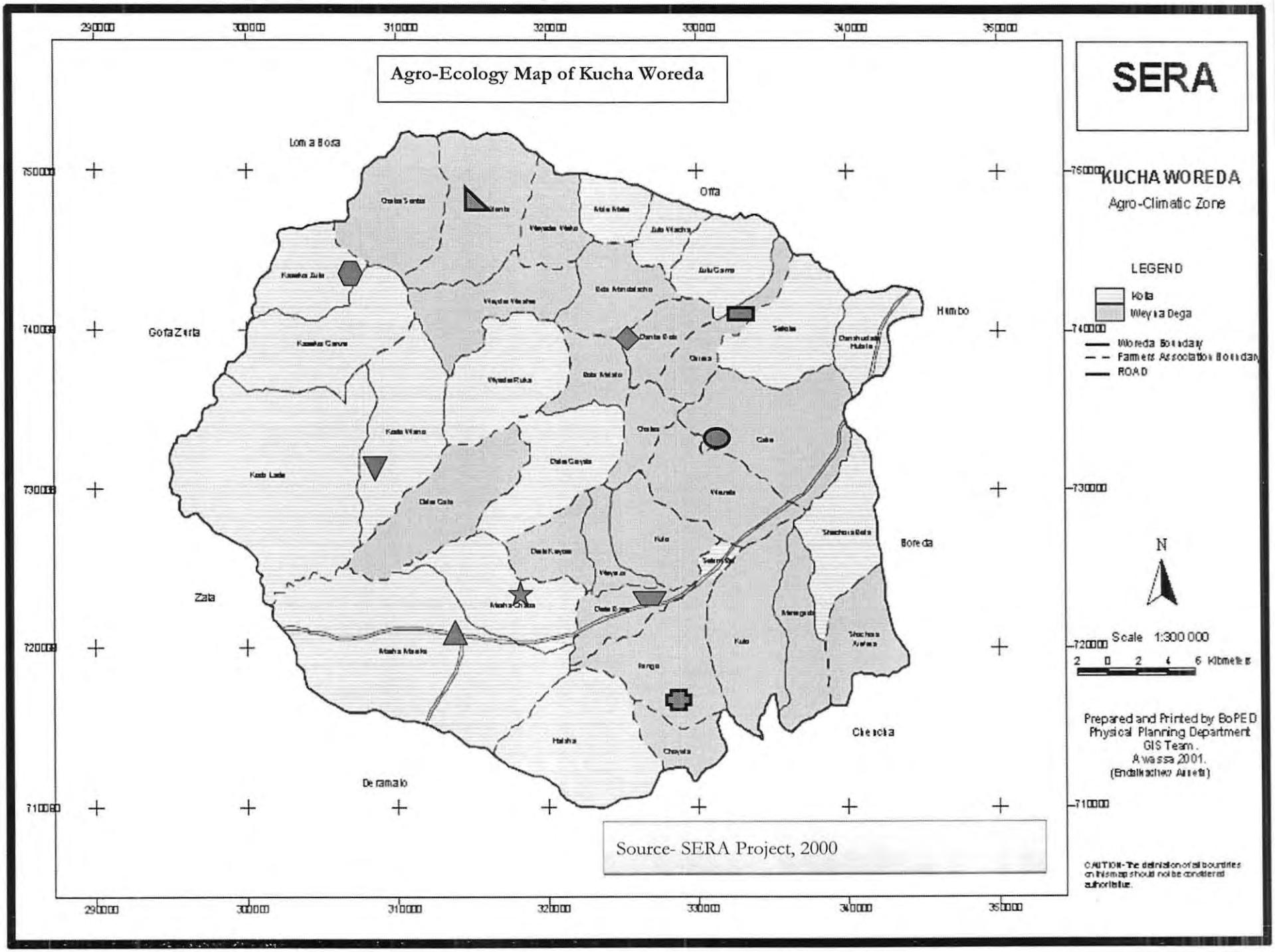
f) Bolla Saturday peak market day- Bolla and Gerera

Therefore, to critically examine the particular characteristics butter producers and traders, one appropriate way is dividing them in terms of distance from the Woreda center, Selamber is important for two reasons. Almost all of the produced butter finds its out let through the only urban center and the absence of all weathered road and regular transport system to passage the produce to market. A total of 200 respondent households were sampled from the Woreda from ten Kebeles, based on distance.

Table 6 Distribution of Households by Kebele

Kebele	Population	Households	Sample Size	Distance
Baso	2633	637	20	8
Fango	2861	684	20	9
Masha Chaba	5435	666	20	15
Masha Morka	4273	609	20	20
Gale	7600	972	20	22
Kodo Wono	3075	551	20	35
Gerera	4937	681	20	40
Kaske Genze	5814	790	20	51
Bolla	9625	1171	20	54
Chaba Wonbi	6922	839	20	55
Total	**53175**	**7600**	**200**	**31km/Average**

Source- Woreda Health Office, 2011


Agro-Ecology Map of Kucha Woreda
SERA
KUCHA WOREDA
Agro-Climatic Zone
LEGEND
Kolla
Weyna Dega
Woreda Boundary
Farmers Association Boundary
ROAD
Loma Bosa
Offa
Gofa Zuria
Humbo
Zala
Boreda
Dermalo
Chencha
N
Scale 1:300 000
2 0 2 4 6 Kilometers
Prepared and Printed by BoPED
Physical Planning Department
GIS Team.
Awassa 2001.
(Endalkachew Assefa)
Source- SERA Project, 2000
CAUTION- The delination of all boundries on this map should not be considered authoritative.

The map shown in the previous page indicates the ten selected Kebeles for this particular study the further legend of the map sown in the table below.

Table 7 Survey Kebeles shown on the map

Legend	Kebele	Distance from the Woreda Center in km	Label for Distance
	Baso	8	Nearer
	Fango-	9	Nearer
	Masha Chaba	15	Nearer
	Morka	20	Middle
	Gale	22	Middle
	Kodo Wono	35	Middle
	Gerera	40	Further
	Kaske Genze	51	Further
	Bolla	54	Further
	Chaba Wonbi	55	Further

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1. Characteristics of Respondents

5.1.1. Household Demographics

A. Sex and Age

As depicted on table 8, 82.5 % of the respondents were women and males constitute the rest 17.5%. This is because of the overwhelming majority of those who engage in butter production and marketing are women and the male were mostly those who trade butter.

Table 8 Sex Composition of Respondents

Sex	Frequency	Percentage
Male	35	17.5
Female	165	82.5
Total	**200**	**100**

Table 9 reveals almost a uniform distribution within the age group range of 21-30, 41-50 and above 50, that is 24, 21, and 22 % respectively. But, those grouped under 31-40 were about 30% and 3% were below 20 years of age. The mean age is 38.5 years, while the median age is 36; the mode value is 34 years with standard deviation of 11.6

Table 9 Age Group Composition of Respondents

Age Category	Frequency	Percentage
Below 20	6	3
21-30	48	24
31-40	60	30
41-50	42	21
Above 51	44	22
Total	**200**	**100**

B. Educational Status

The educational status shown on table 10 indicate that 55.5% of the respondents have not had any regular education, 39.5% have attended primary education, 4.5% learned secondary education and one person or 0.5% received higher education (12+1).

Table 10 Educational Status of Respondents

Educational Level	Frequency	Percentage
Illiterate	111	55.5
Primary Education /1-8/	79	39.5
Secondary Education /9-12/	9	4.5
Higher Education	1	0.5
Total	**200**	**100**

Source- Survey, 2012

C. Agro-ecological Zone

As shown below on table 11, 50% or half of the respondents reside in lowlands and 42% live in mid-highlands which are relatively conducive for livestock production. The rest 8% are highlanders.

Table 11 Agro-Ecological Zone

Household Size	Frequency	Percentage
Highland /*Dega*	16	8
Mid-Highland/*Woyna Dega*	84	42
Lowland/*Kolla*	100	50
Total	**200**	**100**

Source- Survey, 2012

D. Distance from the Woreda Center

Relatively, 40% of the respondents were located 36km or above from the Woreda center, Selamber and 30% each were located between 16-35 kms and below 15kms. The mean distance is 30.4 kms; the mode is 35 while the range is 65.5 kms, as revealed on table 12.

Table 12 Distance from the Woreda Center

Relative Location	Distance in km	Kebeles	Frequency	Percent
Nearer	15 or Below	Baso, Fango and Masha Chaba	60	30
Middle	16-35	Gale, Morka and Kodo Wono	60	30
Farther	36 or Above	Gerera, Bolla, Kaske Genze and Chaba Wonbi	80	40
Total			200	100
Mean= 30.4	Median= 24.5	Mode= 35	Standard Deviation= 18	
Maximum= 68	Minimum= 2.5	Range= 65.5		

Source- Survey, 2012

5.1.2. Household Headship and Size

According to the survey results shown on table 13, 16% of the respondents were female headed households and 84% were male headed.

Table 13 Household Headship

Headship	Frequency	Percent
Female and Household Head	32	16
Male and Household Head	168	84
Total	**200**	**100**

Table 14 shows that 52.5% of the total respondents are composed of 4 to 7 people, 38.5% were whose family size is 8 or more and 9% of the households had individuals 3 or less. The mean household size for this study is 7.3, the median is 7, the mode is 7, the standard deviation is 2.6, maximum household size is 14 2hile minimum is 2 and the range is 12.

Table 14 Household Size

Household Size	Frequency	Percent
Less than or equal to 3	18	9
4-7	105	52.5
Greater than or equal to 8	77	38.5
Total	**200**	**100**

Source- Survey, 2012

5.2. Asset Holding

5.2.1. Domestic Assets

To illustrate the asset holding of respondents, non-livestock asset is chosen on the basis of their contribution to butter production and marketing. Regardless of the housing type, all (100%) of the respondents have residence homes. 45% of the total respondents owned radio to listen to daily news and other information. 30% have mobile cell phones, even though power is the main problem in the absence of fixed electricity to major parts of the Woreda except the two towns of Selamber and Morka. 8% use television with Satellite Dish and owned DVD. But no respondent, surprisingly, reported as owner of refrigerator, motorbike, car, donkey cart and tractor.

Table 15 Asset Holding

Type of Asset	Frequency	Percent
Private Residence	200	100
TV/DVD/Dish	16	8
Radio	90	45
Telephone/Mobile	60	30

Source- Survey, 2012

5.2.2. Housing Type

The survey results summarized on table 16 indicate that 60% of respondents live in corrugated iron sheet made houses and the rest 40% live in grass made houses.

Table 16 Housing Type

Housing Type	Frequency	Percent
Corrugated Iron Sheet	120	60
Grass	80	40
Total	**200**	**100**

Source- Survey, 2012

5.2.3. Land Holding Size

As depicted on table 17, 41% of respondents were holding between 1 up to 2 hectares of land 28% held more than 2 and 31% were doing on less than one hectare of land. The mean land holding size is 1.385, median, mode and standard deviation is 1.0. Maximum land holding size 6.0 and minimum is 0 and the sum is 276.98 hectares.

Table 17 Land Holding Size

Land in Hectare	Frequency	Percent
Below 1 Hectare	62	31.0
1-2 Hectare	82	41.0
Above 2 Hectare	56	28.0
Total	**200**	**100.0**

Source- Survey, 2012

- **The relationship between Land Holding Size and Distance from the Woreda Center**

As noted on table 18, total land holding size increases as one goes out from the Woreda center. This is partly relative less population density when compared to the urban and suburb areas.

*Table 18 Distance from the Woreda Center * Land Holding Size Cross-tabulation*

Distance	Land Holding Size						Total
	<1 Hectare		1-2 Hectare		> 2 Hectare		
	Freq.	Percent	Freq.	Percent	Freq.	Percent	
Nearer Kebeles / Below 15 kms/	21	10.5	19	9.5	20	10	60
Middle Kebeles /16-35 kms/	23	11.5	21	10.5	16	8	60
Farther Kebeles /36 kms or Above/	18	9	42	21	20	10	80
Total	62	31	82	41	56	28	200

Source- Survey, 2012

5.2.4. Grazing Activities

Table 19 and figure 6 both depict us the ways of grazing activities practiced in the Woreda by the respondents. According to the survey, 91% of the respondents replied as communal group grazing in relatively further places from their home as regular way of life to feed and water their livestock usually spend 6-10 hours there. In addition to that 39% of the respondents feed their milking cows at home to give them a special feed and treatment, to milk them three times a day and to protect them from the high intense sun, tsetse fly, and most importantly prevent early pregnancy. 18.5% graze their cattle on their own land mostly in fences and 13.5% practice zero grazing cattle tied with rope and graze until the full circle is intensely grazed.

Table 19 Grazing Activities

Activity	Response	Percent
Communal group grazing	182	91
Fenced grazing inside its own land	37	18.5
Domestic feeding	78	39
Zero grazing	27	13.5

Source- Survey, 2012

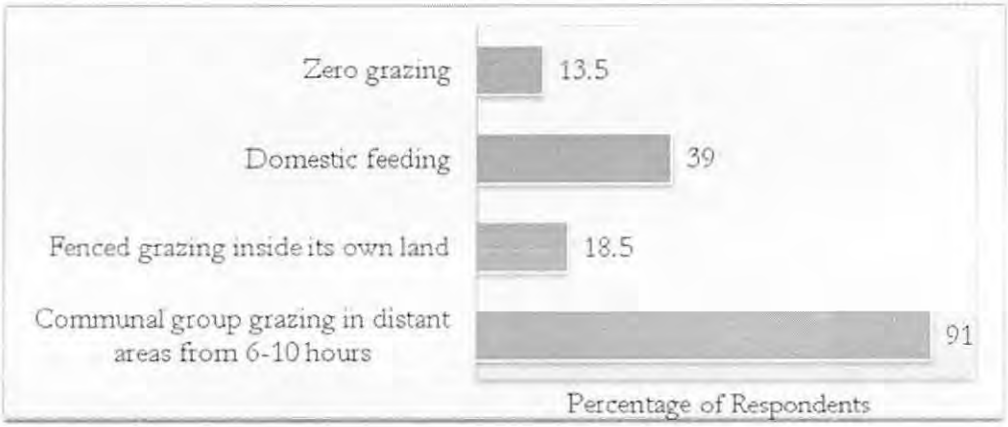


Figure 6 Grazing Activities

5.2.5. Number of Cows

- **The relationship between distance from the Woreda Center and Total Number of Dairy Cows**

Table 21 and 22 show us the relationship between number of dairy and milking cows owned and distance from the Woreda center. 66.5% of the respondents own one milking cow, 31.5% own two but only 2% own 3 three milking cows, so that all of the respondent households at least had one milking cow. It depicts us the number of milking cows increase with distance from the Woreda center, factors being relative abundance of grazing land, exclusive dominance and dependence on agriculture in rural areas.

Table 20 Number of Milking Cows

Distance	Total Number of Dairy Cows									Total
	1	2	3	4	5	6	7	8	Freq.	
Nearer Kebeles / Below 15 kms/	13	29	13	3	1	0	1	0	134	60
Middle Kebeles/ 16-35 kms/	14	24	10	6	5	1	0	0	147	60
Farther Kebeles / 36 kms or Above/	19	45	10	4	0	1	0	1	169	80
Total	46	98	33	13	6	2	1	1	450	200

Distance from the Woreda Center with number of milking cows

Table 21 Total Number of Dairy Cows

Distance	Number of Milking Cows			Total
	1	2	3	
Nearer Kebeles/ Below 15 kms/	46	14	0	60
Middle Kebeles/16-35 kms/	36	23	1	60
Farther Kebeles/ 36 kms or Above/	51	26	3	80
Total	133/66.5%	63/31.5%	4/2%	200
Mean= 1.4 Mode= 1 Standard Deviation 0.5				

Source for both tables- Survey, 2012

5.3. Market Integration of Butter Production

It is observed from table 22 that commercialization index decreases for both sexes as one goes from nearer to middle and further Kebeles. So regardless of sex type, distance significantly affects market integration of butter produce. Distance is directly related to access to market, all weathered road, inputs and cost of feed, veterinary medicine etc.

Table 22 Commercialization Index of Butter Disaggregated by Sex and Distance

Sex	Distance from the Woreda Center	Mean	Freq.	S. Deviation
Female	Nearer Kebeles/ Below 15 kms/	0.9643	52	0.10052
	Middle Kebeles/16-35 kms/	0.9432	49	0.14829
	Farther Kebeles/ 36 kms or Above/	0.7878	64	0.22551
	Total	0.8895	165	0.18918
Male	Nearer Kebeles/ Below 15 kms/	0.6521	8	0.18718
	Middle Kebeles/16-35 kms/	0.6515	11	0.39054
	Farther Kebeles/ 36 kms or Above/	0.6229	16	0.18213
	Total	0.6386	35	0.25869
Total	Nearer Kebeles/ Below 15 kms/	0.9226	60	0.15602
	Middle Kebeles/16-35 kms/	0.8897	60	0.23811
	Farther Kebeles/ 36 kms or Above/	0.7548	80	0.22640
	Total	0.8456	200	0.22375

Source- Survey, 2012

The chart indicates that the total amount butter produced from the survey Kebeles is 198.28 kg of these 164.25 kg or 84.56% is sold in markets every week and the rest 15.75% is used for home purpose. Therefore calculating the commercialization index which implies the market integration of butter product is 0.8456 or 84.56%. The index indicates that butter is a highly commercialized product in Kucha.

Figure 7 Market Integration of Butter Production

5.4. Productivity Analysis of Butter

5.4.1. Income from Butter Sale

According to table 23, the average annual income from butter production per cow is ETB 1166 or less than 100 birr per month, which is quite lower income for larger sized households. Relatively higher income per cow in further Kebeles, which is a result of the possession higher number of cows than the nearer and middle Kebeles. The trend has no difference when disaggregated in to both sexes. The income used for the calculation is the income from milking cows alone during the survey and it does not add the income from other dairy cows.

Table 23 Income from butter sale per cow

Sex	Distance from the Woreda Center	Average Annual Income in ETB	Freq.	Standard Deviation
Female	Nearer Kebeles/ Below 15 kms/	1128.16	52	789.86
	Middle Kebeles/16-35 kms/	1060.63	49	872.02
	Farther Kebeles/ 36 kms or Above/	1444.09	64	1060.13
	Total	1230.65	165	937.04
Male	Nearer Kebeles/ Below 15 kms/	770.65	8	522.27
	Middle Kebeles/16-35 kms/	343.82	11	235.99
	Farther Kebeles/ 36 kms or Above/	1263.18	16	550.13
	Total	861.66	35	608.79
Total	Nearer Kebeles/ Below 15 kms/	1080.49	60	765.94
	Middle Kebeles/16-35 kms/	929.22	60	840.42
	Farther Kebeles/ 36 kms or Above/	1407.91	80	979.30
	Total	1166.08	200	898.16

Source- Survey, 2012

Average net income of butter production per household per annum is ETB 2577.87 and high variability is observed and the higher for those owning more than one milking cow. Income per household increases as we go from nearer to middle and further Kebeles because of the relatively higher ownership of land and milking cows

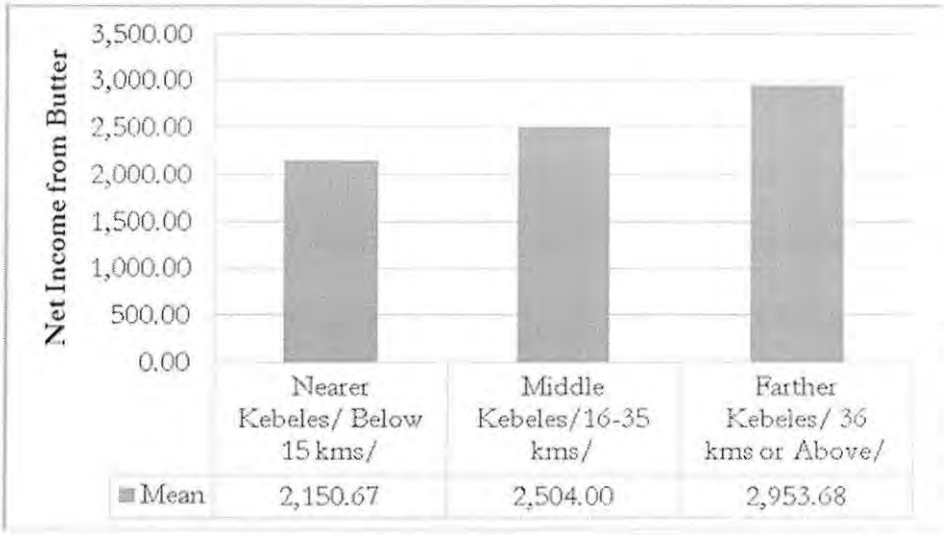


Figure 8 Annual Butter Income per Household

5.4.1. Cost per Cow

The average butter production cost per cow as revealed on table 24 is ETB 246.26. The cost increases as one goes from nearer to further Kebeles The components of the cost were mainly the feed cost and veterinary cost and transportation cost for some is analyzed. The relative reduction of butter production costs in middle distance Kebeles is due to the decline of such costs which combine the merits of proximity to urban areas/nearer and remoter/further/ areas like veterinary medicine (advantage over farther areas) and feed cost (advantage over nearer areas).

Table 24 Cost of Butter Production per Cow

Sex	Distance from the Woreda Center	Mean	#	Standard Deviation
Female	Nearer Kebeles/ Below 15 kms/	166.04	52	121.95
	Middle Kebeles/16-35 kms/	166.87	49	88.80
	Farther Kebeles/ 36 kms or Above/	374.74	64	280.00
	Total	247.24	165	217.75
Male	Nearer Kebeles/ Below 15 kms/	207.23	8	284.54
	Middle Kebeles/16-35 kms/	81.62	11	59.41
	Farther Kebeles/ 36 kms or Above/	368.91	16	256.35
	Total	241.66	35	250.77
Total	Nearer Kebeles/ Below 15 kms/	171.54	60	150.53
	Middle Kebeles/16-35 kms/	151.24	60	90.11
	Farther Kebeles/ 36 kms or Above/	373.57	80	273.87
	Total	246.26	200	223.21

Source- Survey, 2012

5.4.2. Butter Yield per Cow

The average butter yield per cow per week is 0.77kg, a little over $3/4^{th}$ of a kilogram and the yield is higher in nearer Kebeles with 0.86 kg. Factors affecting butter yield were number of milking cow, household consumption level, market access, transport access etc.

Table 25 Yield per Cow

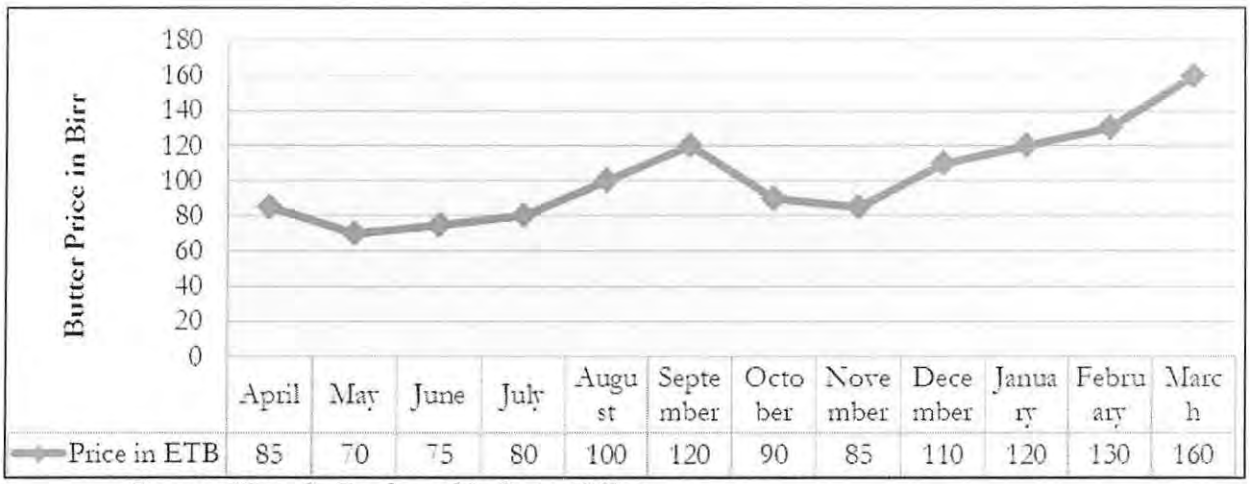
Sex	Distance from the Woreda Center	Mean yield in kg	Frequency	Standard Deviation
Female	Nearer Kebeles/ Below 15 kms/	0.8413	52	0.63599
	Middle Kebeles/16-35 kms/	0.7236	49	0.50965
	Farther Kebeles/ 36 kms or Above/	0.7275	64	0.30678
	Total	0.7622	165	0.49078
Male	Nearer Kebeles/ Below 15 kms/	0.9688	8	0.86280
	Middle Kebeles/16-35 kms/	0.5341	11	0.25057
	Farther Kebeles/ 36 kms or Above/	0.9271	16	0.62722
	Total	0.8131	35	0.61830
Total	Nearer Kebeles/ Below 15 kms/	0.8583	60	0.66322
	Middle Kebeles/16-35 kms/	0.6889	60	0.47689
	Farther Kebeles/ 36 kms or Above/	0.7674	80	0.39523
	Total	0.7711	200	0.51399

Source- Survey, 2012

5.4.3. Market Price of Butter

According to the data obtained from Kucha Woreda Trade and Industry Office, the office collects data on weekly basis in Selamber and other market centers through its market inspection department. However the data from rural market centers is not regular and relevant as most of the consumers and traders buy butter from Selamber and it is a major outlet of butter produce to other areas.

This is a data, three major factors; namely, season (*Kiremt and Bega*), holydays and fasting periods were found to exert considerable impact on butter and price. The price of butter was identified to reach its peak during the big holydays, non-fasting periods and winter (*Bega*) season when the economic activities become high and it lowers during fasting period and summer (*Kiremt*) season when economic activities become low.



Source- Woreda Trade and Industry Office

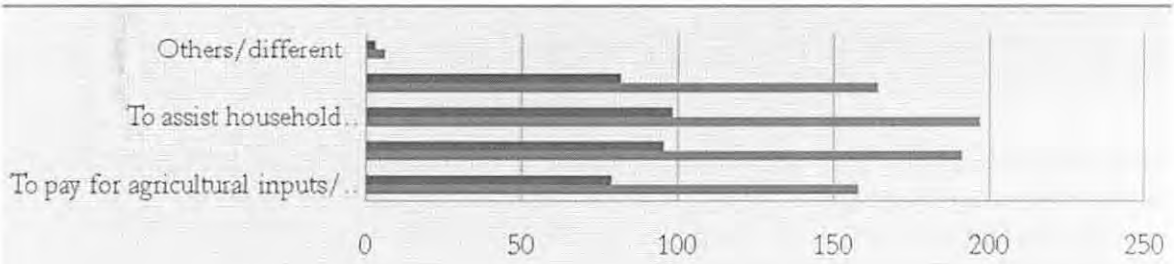
Figure 9 Market Price of Butter

The Price has shown a non-regular fluctuation across the last 12 months except higher prices during New Year, Christmas and Easter Festivals and relatively lower prices during fasting months. This trend of higher prices in Holidays and lower prices in fasting months is still observable but according to butter traders and experts the price range has been decreasing these days. This is mainly attributed on one hand to declining supply or production and higher demand or consumption of butter and on the other hand the fasting people does not stop buying butter rather they collect it at low price and preserve it until the fasting is over.

Higher butter prices are registered in September (100), January (120), February (130) and a record on March (160) while relative lower prices were observed in May (70,) June (75), July (80) and November (85). The Average annual butter price of 1kg for last 12 months of 2003/4 EFY is ETB 102 and the range was from 70 to 160 and has shown an increase of 114%.

5.5. Importance of Butter Income

As figure 10 illustrates us, activities carried out as a result of the income rewarded from butter sale. According to the survey, 98.5% of the respondents mentioned assisting household expenditures for the purchase of food stuff, consumer goods and so on. 95.5% replied that with the income th ey send children to school buying educational tools and fees. 82% also use it to pay for various agricultural inputs such as fertilizer, improved seed, feed for cows, and medicine for animals. 79% of them again replied as they use the reward from butter to strengthen social participation such as Idir, Ikub etc. and finally a few who are categorized under others which account for 3% also responded as in addition to the above reasons, they use butter income for reinvestment, to pay wages for daily laborers, save for contingency in case of emergencies and to buy cotton to prepare and sell traditionally handmade clothes for them, children and market.



	To pay for agricultural inputs/ fertilizer, improved seed, feeds for cows/	To send children to school	To assist household expenditure/consumables,	To strengthening social participation such as Idir, Ikub.. etc	Others/different
Percentage	79	95.5	98.5	82	3
Response	158	191	197	164	6

Source- Survey, 2012

Figure 10 Importance of Butter Income

5.6. Women and Butter Production and Marketing

Table 26 demonstrates us almost all of 99% of butter production and sale and the majority or 76% of the income from butter sale is performed and controlled by women and 40% of women exclusively decide over the income obtained from butter production and marketing. Women also marginally excel their husbands in covering other household expenditure apart from their combined contribution. But 78% of livestock purchase or sale is by the men while 6% by women and both men and women together account for 16%.

Table 26 Women and Butter Production and Marketing

S/ no	Labour Division	Husband		Wife		Together	
		#	%	#	%	#	%
1.	Livestock Purchase and Sale	156	78	12	6	32	16
2.	Butter Sale [3]	0	0	196	99	2	1
3.	Handling butter income	12	6	152	76	36	18
4.	Decision over butter income	14	7	80	40	106	53
5.	Other Household Expenditures	34	17	46	23	120	60

Source- Survey, 2012

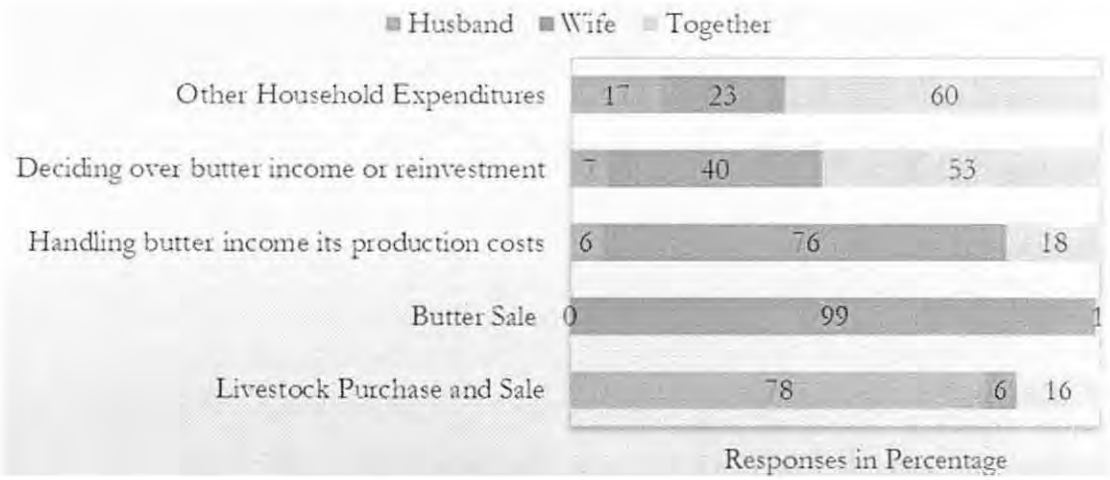


Figure 11 The role of Women in Butter Production and Marketing

[3] Supported with daughters and other children

The results of successive focus group discussions and other observations indicate that people in Kucha value sanitation as a necessary condition at a personal or household level to keep the hygienic and quality of butter supplied to market. A woman who sells unhygienic or adulterated butter in market is denounced in public and given lower social acceptance. According to the custom of the people of Kucha, any woman entering the market with nothing in hand is considered as taboo. So butter is an ideal product to make women participants in marketing process and the return from butter sale is important to buy anything thought to be essential for home utility.

Women in Kucha, according to the culture, have over 80% of the right to decide on the production, marketing, and on its return after the market. Butter also plays an important role in strengthening and maintaining social cohesion. Distinguished people are always invited to home and given butter added coffee and food. Women who gave birth to a new baby also put butter on their head and eat special foods enriched with butter. Relatives and intimate families also do this in order to express their support. This culture is said to be in local language "Kaacha".

Women also select a chairwoman and from a group called Oyssa Shufo, which is traditional butter saving custom among the female in Kucha. The system is exercised routinely among at most 7 women who live in one nearby area. It is about saving butter yielded every day from the homes of all members of the group and facilitating the favorite women to sell the accumulated butter to the market. These shifts regularly to the next until all members benefit in the same fashion. The butter is weighed and proved to be equal every day. The custom is at a risk of disappearance because of modern saving techniques but it has its own advantages if practiced these days facilitating credit and saving.

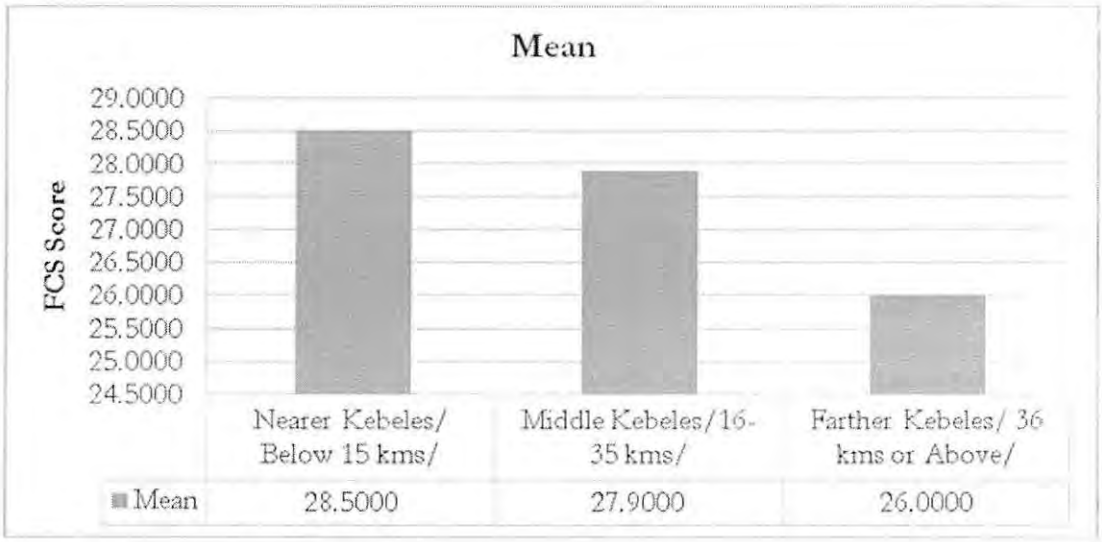
5.7. Food Security Assessment

5.7.1. Food Consumption Score

The WFP FCS tells us on table 28 that the average FCS of the Woreda is 27.3 which indicates a border line food consumption score. The FSC slightly decreases as one goes from nearer (28.5%) to further Kebeles (26%). This is because of declining diet variety as a result of relative isolation from main road, lower educational status. Totally, according to the WFP Food Consumption Score, 29.5% of the respondent households were at poor consumption, while 61% at borderline and 9.5% on acceptable FCS.

Table 27 Food Consumption Score

Distance from the Woreda Center	Mean	Frequency	S. Deviation
Nearer Kebeles/ Below 15 kms/	28.5	60	7.4
Middle Kebeles/16-35 kms/	27.9	60	7.5
Farther Kebeles/ 36 kms or Above/	26	80	6.5
Woreda Average	**27.3**	**200**	**7.13**



Source for both table and figure - Survey, 2012

Figure 12 Food Consumption Score

5.8. What is Behind the Quality of Butter?

The analysis used here are all the results of the focus group discussion with rural women so that it should be acknowledged as their own knowledge.

1. **Feed Type-**

- Peculiar grasses that grow naturally in the grasslands such as *Wosho, Hargaza, Sapa, Arzuma* which enhance the quality and quantity of milk and butter.
- Distinct variety of leaves of both small and large trees such as leaves of Itruwanje, *Sholla, Phara, Danddretta, Haytta Tukke* /Coffee leaf/ and *Geleshi Gembella.* These leaves are given to cows both directly or grinded and mixed with hot water and other ingredients are added on it. More on Itruwanje experiment
- Crop residues such as straw, cotton silage and other fodders prepared from the floors left over bought from cereal grinding machines/ *Frushka* in Amharic.
- Elder mothers collect leguminous grasses and plants like *Maatta Maata* and give them to milking cows.

2. **Special Treatment Provided to Milking cows-**

- Usually milking cows are treated specially in isolation from others in feeding them domestically; zero grazing and fenced grazing is sometimes done.
- The main reason is to prevent them from intense sun, provide them with adequate water and other treatments. But they live together with others and with their calves. This is a psychological treatment to easily stimulate their breast to increase the amount of milk.
- Women especially mothers pass the night with the milking cows, if the home is different. Culturally men tilt towards the oxen and bullocks and women to cows and heifers.

3. **On the butter**

- Less leftovers after purification… little weight loss
- Yellowish color
- A nice taste and a pleasant smell
- Stiffer when pressed with finger
- The fat content is higher, the ash, water, is lower
- Higher attention towards sanitation and quality
- The clay pot is thoroughly washed and condensed with peculiar flora

5.9. Indigenous butter Production techniques

5.9.1. Butter Making

Butter is extracted from yoghurt using local churners. First the cow is prepared and the calf is brought to near, sometimes allowed to sack, this is only to simulate the breast. Then the clean traditional gourd is used to collect the milk. Next the milk is poured in to the clay pot until the milk is soured. The amount milk poured should not exceed half of its volume. After the whole milk is soured naturally, the churning process starts. Butter making is done by hand in butter churn, the process is known as *Buka,* locally. Usually the churning process takes 1 up to 1½ hours

Figure 13 (a) Traditional milk gourd (*Gose)*, (b) Milking process *(Yeeso)* and (c) Traditional churning process *(Buka)*

The clay pot/*Manaace* in local language/ has one small hole on its neck,/*Phine* in local language/ the hole lets one to see the milk is defatted or not. If defatted, it is

moved slowly until the scattered butter is pulled together. After the butter collected on top of the milk, the defatted milk is slowly decanted from the butter cream. Then the butter is thoroughly washed until the milk part is removed to enhance the quality. Finally the butter is tied with dried thin stems of *Enset* called *Gobba* and put inside a big pot where aeration is low, but sometimes it is left inside the clay pot for the next churning to increase the quantity of butter. However the process is time consuming, inefficient, and results in low quality dairy products, with short shelf-life and low market value.

5.9.2. Value Addition Techniques

I. **Washing-** A thorough water washing is the basic way of keeping the hygiene and quality of every material/ hands, gourd, clay pot, the butter etc/ used for butter making. If carefully washed, it will have clean taste, dense color, the water and milk particles will be removed and looks dry, and it will also be so smooth that the butter melts readily on tongue and no significant weight loss after clarification process. Traditionally the clay pot is also washed before and after churning with small plant called *Shaasha,* locally. The plant has pleasant smell inducing the butter flavor at the end.

II. **Condensation-** this is a custom of steaming up the clay pot with smokes of different plants such as corn cob, olive plant and a tree called *Taytta,* locally. This is usually done after washing putting the clay pot upside down on the smoke in order to improve the smell of the pot on one hand and to kill small microorganisms in the pot.

III. **Clarifying-** clarified butter is a butter with almost all of its water and milk solids removed, leaving almost pure butterfat. It is made by heating raw butter to its melting point then allowing it to cool; after settling the remaining components

separate by density. At the top, whey proteins form a skin which is removed, and the resulting butterfat is then poured off from the mixture of water and casein proteins that settle at bottom.

Figure 14 Butter clarification (a), clarified butter (b &c)

5.9.3. Preservation Techniques

Butter needs various mechanisms to preserve it for future use, and unless handled with abundant care, butter is easily spoiled and infected with bacteria that can harm people. So it needs various mechanisms to preserve it for future use. There are numerous modern technology supported systems of preservation like refrigeration, pasteurization irradiation. But people traditionally here in Kucha employed various indigenous techniques to preserve it. A woman who preserved butter for 10 years or more is socially a higher status and the butter is eaten by the known higher class people in different cultural ceremonies. So preserving butter left over home consumption in ancient times is a common ritual activity. This is no longer practiced nowadays, but people still preserve to sell at market, to social activities such as weddings, etc. Washing is a basic preserving technique, salting the butter, canning, burying it under soil, cold storage in a secure place. If for short time and for home consumption, it is heated and clarified. Burying is less regularly practiced and important to preserve it for long period like many years.

5.9.4. Importance of butter

No question that eating butter increases absorption of many other nutrients in other foods and induces the flavor of foods in addition to its nutritional value. But here in Kucha people employ butter for many uses alongside to its food value. The first widely accepted use of butter is its cosmetic value. Women in rural areas where the access of other modern lotions and hair food is low directly apply fresh butter to their hair and body. The other use of butter here is using it as medicine. Butter is a perfect medicine to heal headache, pneumonia, massaging to treat bone dislocation and different wounds on every part of body. Butter is essentially important when a woman delivers a baby from healing wounds of the mother and baby to massaging and put on the heads of the two. To treat headache, the melted butter is allowed to enter through one of the holes a nose of the patient. The tube is usually the Enset stem tube and the butter dissolved by putting hot metal knife on it some herbal ingredients also added on it, the same process is applied to heal other diseases and pneumonia. Lastly but in ancient times, butter not only has it been regarded from time immemorial as a food fit for the gods, but its use appears to have been divinely recommended and its users promised certain immunities against evil. Therefore butter is a multipurpose commodity other than food for the rural community in Kucha. The leftover after butter clarification has numerous benefits like preparing and lubricating clay stove when baking *Enjera.*

5.4. Problems in Production and Marketing

5.4.1. Major Problems in Butter Production

The table above tells us that the major problem that affects both the quantity and quality of dairy production in general and butter production in particular. Shortage of feed and water due to the prolonged dry season and the reduction of grazing land as a result of human action such as forest fire was the major problem encountered in butter production, answered by 91.5% of the respondents. Market price fluctuation is suggested by 78%, lack of infrastructure such as all-weather road, telecommunication and electric power, rated by 75%, absence of market information 66%, livestock disease cited by 62.5%, lower production of indigenous cattle breeds referred by 37%, lower market demand for butter during fasting seasons by Orthodox Christians 31%, spoilage and melting is replied as a problem by 12%.

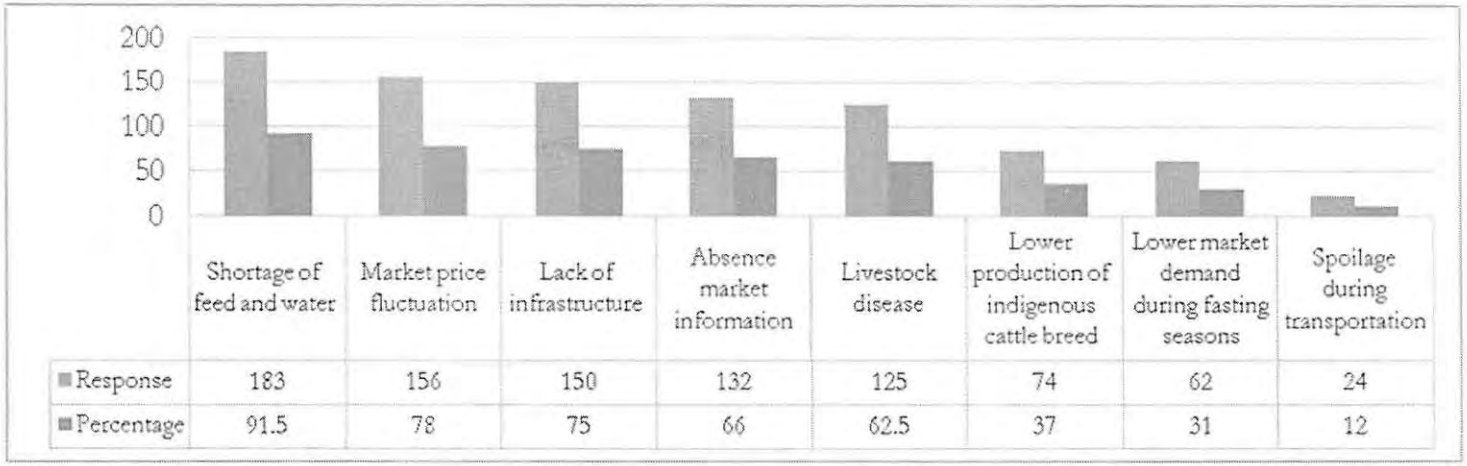
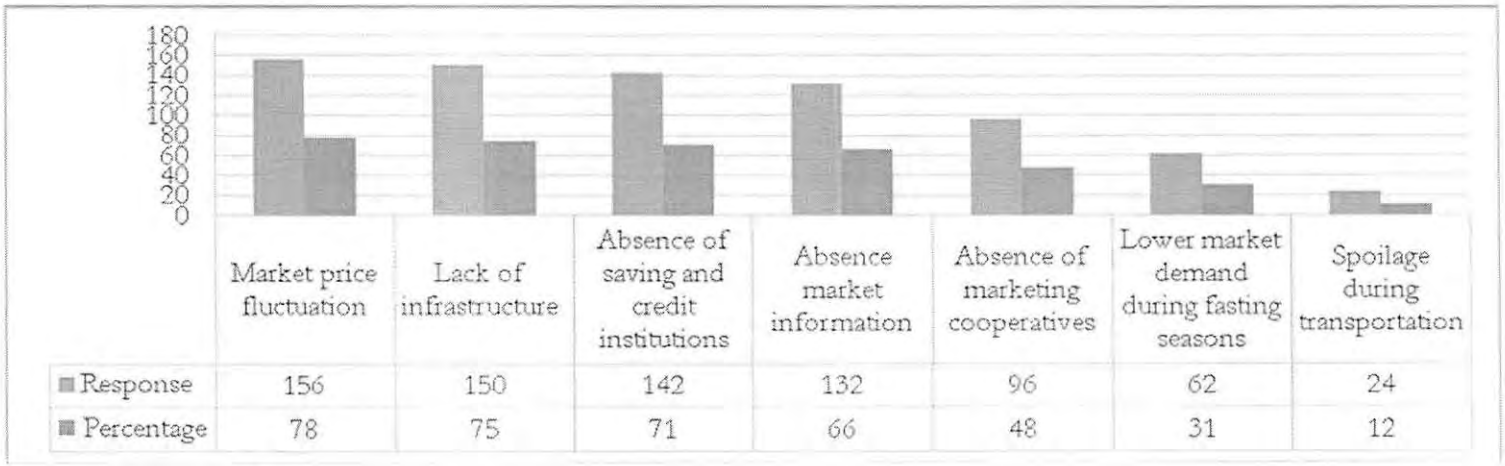


Figure 15 Problems in Butter Production



Source- Survey, 2012

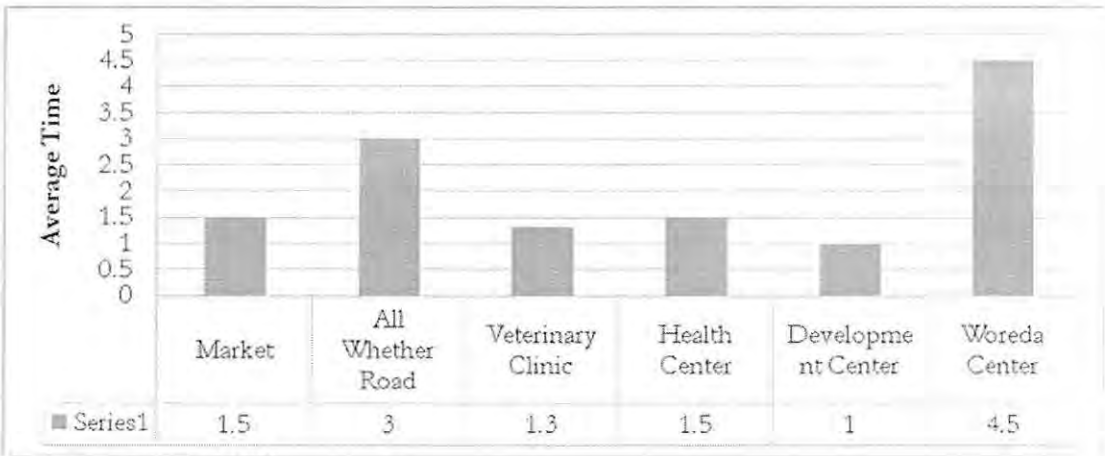
Figure 16 Problems in Butter Marketing

5.4.2. Major Problems in Butter Marketing

Regarding the major problems that influence marketing of butter which is depicted on table 19 on the previous page, market price fluctuation as replied by 78% of the respondents, majority of them or 75% again mentioned lack of infrastructure such as road, telephone and electric power and institutions like veterinary clinics, health centers, shortage of saving and credit association by 71%, shortage of market information by 66%, absence of marketing cooperatives by 48%, lower market demand for butter during fasting seasons by 31% and spoilage and melting of butter during transportation by 12% of the respondents.

5.4.3. Average Time Required to Reach to Various Infrastructures

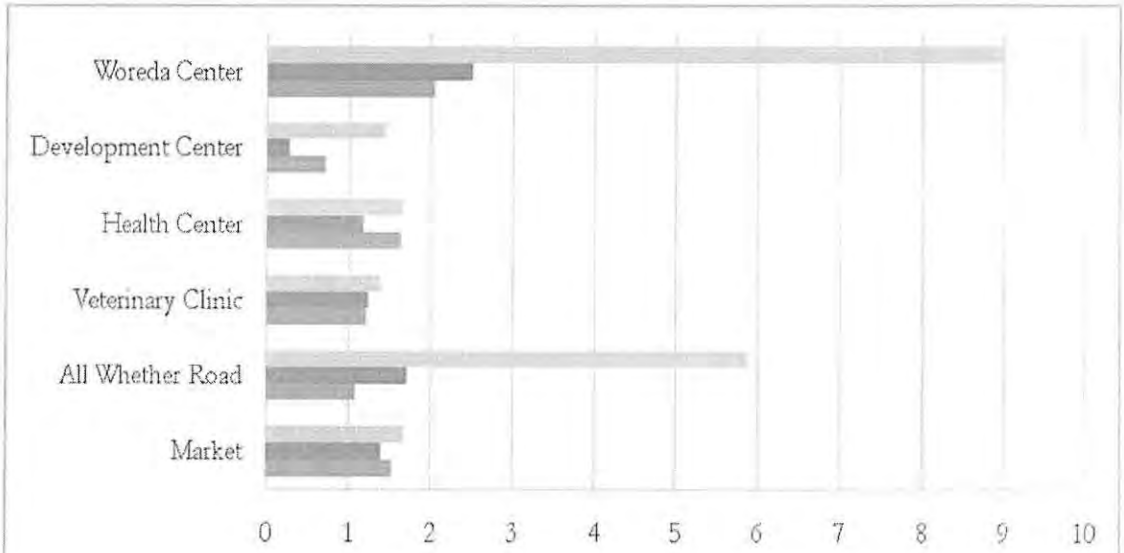
Figure 19 depicts that reaching the Woreda center and all whether roads are most time consuming activities performed by the respondents. The Woreda center serves both as an administrative and economic center where butter produces collected from other Kebeles either gets its outlet or directly sold to consumers. The purpose of taking take time rather than distance is the absence of all weathered road with in the Woreda and hence a regular public or freight transport system.



Source– Survey, 2012

Figure 17 Average time to reach to infrastructures and socio-economic institutions for each Kebeles

The average time taken to reach to primary market is 1.5 or one hour and a half. An hour is required for a person to reach to development center, One hour and twenty minutes to reach to Veterinary clinic, an hour and half to health centers. Respondents averagely travel 3 hours to reach to all weathered road that is the only major road that is extended from Wolayta Soddo to Sawla. To conclude, it takes more time for respondents travel to the Woreda center and all weathered road than other socio-economic institutions such as development, health, veterinary clinic and primary market.



	Market	All Whether Road	Veterinary Clinic	Health Center	Development Center	Woreda Center
Further Kebeles	1.67	5.88	1.38	1.65	1.43	9
Middle Kebeles	1.4	1.7	1.23	1.17	0.27	2.5
Nearer Kebeles	1.53	1.08	1.2	1.63	0.7	2.03

Source, Survey 2012

Figure 18 Average time to reach to infrastructures and socio-economic institutions for the whole Woreda

CHAPTER SIX

SUMMARY, CONCLUSION AND POLICY IMPLICATION

The last chapter is about summary, conclusion and policy implication that will be helpful in serving as a tool for decision makers to design appropriate policies for intervention which would rather help smallholder butter producers and traders be more beneficiaries of the potential in SNNPRS with special attention to Kucha Woreda.

6.1. Summary and Conclusion

The results of the research that were analyzed with the help of descriptive statistics and econometrics models using different softwares such as SPSS and Microsoft Excel are shortly summarized as follows:

A total of 200 respondent households were chosen from 10 of the 32 total Kebeles of the Woreda based on distance from the Woreda administration and economic center, Selamber. Among these sampled households for this particular study, 82.5 % were women and the rest 17.5% were males and 16% of the respondents were female headed households and 84% male headed. The mean household size for this study was 7.3, while the mean age was 38.5 years.

The educational status survey also indicate that 55.5% of the respondents have not had any regular education and 39.5% have attended primary education where as 4.5% learned their secondary education and one person or 0.5% received higher education (12+1). 50% or half of the respondents reside in lowlands and 42% live in mid-highlands which are relatively conducive for livestock production, the rest 8% were highlanders. Nearly 40% of the respondents were located 36km or above from the

Woreda center Selamber, 30% in between 16-35km and again 30% located below 15kms; the mean distance was 30.4 kms.

All of the respondents had their own residence, 60% of these was made up of corrugated iron sheet and 40% was grass made traditional houses, a little less than half of the respondents(45) possessed radio, 30% had cellphone, 8% owned TV, none of them had refrigerator, (motor)bicycle, vehicle, tractor, donkey(horse)cart. The above assets were chosen to assess the access to market information, transportation and cooling systems. 31% of the respondents were holding below 1 hectare of land, 41% 1-2 hectare and 28% above 2 hectares of land and the mean land holding size is 1.4 hectare.

Communal grazing in distant places mostly lasting from 6-10 grazing hours is the dominant grazing activity performed and ranked first by 91% of respondents, domestic, fenced and zero grazing was not familiar and practiced only for milking cows. The number of dairy and milking cows increases with distance from the Woreda center, factors being relative abundance of grazing land, relatively exclusive dominance and dependence on agriculture in distant Kebeles. The total amount of weekly butter produced from the surveyed ten Kebeles was 198.28 kg of these 164.25 kg or 84.56% was sold in markets every week and the rest 15.44% is used for home purpose. Therefore calculating the commercialization index which implies the market integration of butter product is 0. 8456. The index indicates that butter is a highly commercialized product in Kucha by 84.56%. So regardless of sex type, distance significantly affects market integration of butter produce, it is directly related to access to market, all weathered road, inputs and cost of feed, veterinary medicine etc.

The survey result also indicated that the average annual income from butter production per cow was ETB 1166 or in other words is less than 100 birr per month,

which was quite lower income for larger sized households. Average net income of butter production per household per annum was ETB 2577.87 and high variability was observed among those owning more than one milking cow. Relatively higher income per cow in further Kebeles, which was a result of the possession higher number of cows than the nearer and middle Kebeles. The trend has no significant difference when disaggregated in to both sexes.

The average cost of butter production per cow was ETB 246.26. The cost increases as one goes from nearer to further Kebeles and the components of the cost were mainly the feed and veterinary cost and transportation cost for some is analyzed. The average butter yield per cow per week was 0.77kg, a little over $3/4^{th}$ of a kilogram and the yield was higher in nearer Kebeles with 0.86 kg. Factors affecting butter yield were market and transport access, number of milking cow, household consumption level etc. were significant.

According to the data from the Woreda Trade and Industry Office, three major factors; namely, seasonal variation in supply (*Kiremt and Bega*), religious and cultural holydays and fasting periods were found to exert considerable impact on butter supply and demand and hence on its pricing. The price of butter was identified to reach its peak during the big holydays, non-fasting periods and winter (*Bega*) season when the economic activities become high and it lowers during fasting period and summer (*Kiremt*) season when economic activities become low. According to the survey, 98.5% of the respondents ranked backing household expenditures as the primary activity by the income from butter sale, covering the educational expenses of their children ranked second with 95.5%, then purchase of various agricultural inputs with 82%, fourthly 79% of them again replied as they use the reward from butter to strengthen social participation such as Idir, Ikub etc.

Various feed types provided to milking cows such as peculiar grasses that grow naturally like *Wosho, Hargaza, Sapa, Arzuma* and leguminous grasses like *Maatta Maata* (all italicized in local name, scientific name still to be provided) and distinct variety of plant leaves such as leaves of *Itruwanje, Etta Haytta (Sholla leaf), Phara, Danddretta, Haytta Tukke (Coffee leaf) and Geleshi Gembella* are given to cows both directly or grinded and mixed with hot water and other ingredients are added on it, Crop residues such as straw and silage) enhance the quality and quantity of milk and butter. Special indigenous treatments provided to milking cows for instance, usually milking cows are treated specially in isolation from others in feeding them domestically; zero grazing and fenced grazing is sometimes done to prevent them from intense sun, provide them with adequate water and other treatments but they live together with others and with their calves this is a psychological treatment to easily stimulate their breast that increases the amount of milk yield and women especially mothers pass the night with the milking cows, if the home is different. Culturally men tilt towards the oxen and bullocks and women to cows and heifers. The above treatments and special feed to milking cows have their impact on different features of the butter of Kucha, few of them is, less leftovers after clarification, little weight loss, yellowish color, a nice taste and pleasant smell, stiffer when pressed with finger, the fat content is higher, the ash and water is minimal, culturally higher attention towards sanitation and quality, the clay pot is thoroughly washed and condensed with peculiar flora like *Taytta, Burchche* (maize cob) and *Shaasha*

Concerning the indigenous production techniques, first the cow is prepared and the calf is brought to near, sometimes allowed to sack, this is only to simulate the breast. Then the clean traditional gourd is used to collect the milk. Next the milk is poured in to the clay pot until the milk is soured. The amount milk poured should not exceed

half of its volume. After the whole milk is soured naturally, the churning process starts. Butter making is done by hand in butter churn, the process is known as *Buka,* locally. Usually the churning process takes 1 up to 1½ hour. Then the butter is thoroughly washed until the milk part is removed to enhance the quality. Finally the butter is tied with dried thin stems of *Enset* called *Gobba* locally and put inside a big pot where aeration is low, but sometimes it is left inside the clay pot for the next churning to increase the quantity of butter.

To add value, A thorough water washing is the basic way of keeping the hygiene of every material /hands, the gourd, clay pot, the butter etc./ used for butter making. If washed carefully, it will be so smooth so that the butter melts readily on tongue and no significant weight loss after clarification process. Traditionally the clay pot is also washed before and after churning with small plant called *Shaasha,* locally. The plant has strong smell inducing flavor which also affects the smell of the butter output. The other custom is condensing the clay pot with smokes of different plants such as corn cob, olive tree and a tree called *Taytta.* This is usually done after washing putting the clay pot upside down on the smoke in order to improve the smell of the pot on one hand and to kill small microorganisms in the pot. Clarifying is the other technique.

Traditionally in Kucha employed various indigenous techniques to preserve it. A woman who preserved butter for 10 years or more is socially a higher status and the butter is eaten by the known higher class people in different cultural ceremonies. Washing is a basic preserving technique, salting, canning, burying it under soil, cold storage in a secure place.

In Kucha people employ butter for many uses alongside to its food value. The first widely accepted use of butter is its cosmetic value. Women in rural areas where the access of other modern lotions and hair food is low directly apply fresh butter to their

hair and body. The other use of butter here is using it as medicine. Butter is a perfect medicine to heal headache, pneumonia, massaging to treat bone dislocation and different wounds on every part of body. Butter is essentially important when a woman delivers a baby from healing wounds of the mother and baby to massaging and put on the heads of the two. To treat headache, the melted butter is allowed to enter through one of the holes a nose of the patient. The tube is usually the Enset stem tube and the butter dissolved by putting hot metal knife on it some herbal ingredients also added on it, the same process is applied to heal other diseases and pneumonia. Lastly but in ancient times, butter not only has it been regarded from time immemorial as a food fit for the gods, but its use appears to have been divinely recommended and its users promised certain immunities against evil.

The major problem that affects both the quantity and quality of butter production, according to the survey are: shortage of feed and water due to the prolonged dry season and the reduction of grazing land as a result of human action such as forest fire is the major problem encountered in butter production, livestock disease, lower production of indigenous cattle breeds,

Regarding the major problems that influence marketing of butter are absence of saving and credit association, absence of marketing cooperatives. While, market price fluctuation is suggested, lack of infrastructure such as all-weather road, telecommunication and electric power, absence of market information lower market demand for butter during fasting seasons by Orthodox Christians, spoilage and melting were problems affecting both butter production and marketing.

6.2. Policy Implications

1. Actions towards improving service provision by main development actors like government, NGOs, FBOs and CBOs, on areas such as;
   - Increasing the accessibility of infrastructure and various socio-economic institutions such as road, animal health clinics etc.
   - Direct effort and intervention by government towards improving butter production and marketing by agents and workers at development centers at Kebele level. /Mainstreaming butter production and marketing/
   - Introduction of modern production techniques, preservation, churning, and packing tools which can save energy and time as well as user safety, without disregarding the useful indigenous customs[4]
2. A key policy focus on correcting distortions in butter market through;
   - Setting up butter trading cooperatives and unions and/or incorporating butter marketing under the already established ones by government, NGOs etc.
   - Increasing access to credit and saving service from rural micro-financing institutions for smallholder butter producers.
   - Strong and integrated market regulation activities to stabilize and make the butter market more competitive/controlling illegal brokers and setting Market Information System/
   - Promoting investment on butter production like through attracting PLCs that can establish value adding plants such as processing and packing.
   - Making linkages to creating partnership with bigger institutions such as universities, hotels and restaurants in order to establish sustainable markets and integrating it with cooperatives and unions

[4] Including regulation and combating adulteration

3. Policy and of course decision makers need to focus still on animal health extension system
    - Strong and concerted effort towards controlling livestock diseases in general and trypanosomiasis in particular and sufficient animal health experts at Kebele level, the current distribution is one animal health technician to four Kebeles, and this is not enough.
    - Capacitating the already established animal health posts and clinics with logistics such as veterinary medicine, and other transport facilities to access all households
4. Policy makers need to focus on and account for livestock–environment interactions.
    - Environment protection and rehabilitation activities like water and soil conservation should be strengthened and sustained and so does the community ownership of the activities;
    - Development of communal water points for livestock with a due attention to fair and wise management of these resources;
    - Introduction of improved feed types like hay making, silage, treating them with urea, *Dasho* grass/multiplying in nurseries/, rehabilitating the seeds of indigenous grasses and plants that enhance the quality and quantity of milk and butter e.g. *Itruwanje(Ehretia abyssinica)*
    - Introducing zero grazing or fenced grazing in order to relieve the pressure on communal pastures and the subsequent loss and degradation of land. /private grazing pastures or *Qooro*, /improved grazing-land management/
    - Extending artificial insemination service and selection of best species and cross breeding it with others /improved breeds/

5. Policy-makers need to consider the multiple roles and contributions of rural women livestock production in general and butter production in particular and it is important to the livelihoods of a large percentage of rural women living in poverty.
    - Empowering rural women through formal education, life skill training in FTCs
    - Increasing their credit access and facilitating saving in /promoting the indigenous *Oyssa Shufo/*
    - Ensuring women's participation in socio-economic and political decision making process
    - Improving their resource and property ownership.
6. The current donor funded food security programs/PSNP and HABP/ in the Woreda can focus on boosting butter production such as yield per cow to increase household income that helps them create house hold Assets which in turn decrease their vulnerability, and help them resist shocks, and quicker resilience from externalities etc.
    - The WFP model of measuring of food security, FCS, showed a direct relationship with income from butter sale, which in turn directly related to yield per cow. This is because of the increase in income as a result of additional yield per cow helped households to consume better. Therefore policy efforts should give emphasis on improving butter yield per cow through feed development, genetic improvement, improving animal health and tackling market side problems like setting up butter trading cooperatives, market information system, access to credit and saving.
7. The absence of any research and development activities on butter production and marketing is a key limiting factor for its development and hence a dairy

development programs which focus on butter needs to be supported by a well-resourced institutional system for research and technology supply.

8. It is women who overwhelmingly involve in butter production and marketing, not only involvement but also hold the income from butter sale. However their decision over the income is significantly limited in terms of reinvestment and capital formation. Policy attention in the area of women economic empowerment through capacity building to help them better decide on the income, enhancing productivity and improving market bargaining power through increasing their access to credit and saving, modern production.

To sum up the effective application of the policy implications would have the next three major outcomes:

- **Process improvement**

This is about improving the existing process of butter. It should be directed toward increasing productivity and efficiency like enhancing the output in yield per cow, reducing time and efficiency of the process of butter churning, through the introduction of modern butter churning machineries, introducing modern technology.

- **Product improvement**

This is the result of the process improvement and can be done through intervention in animal feed and health, safety standards like containing adulteration. This is particularly important to dominate the market and protect themselves against product substitution, like other vegetable butter, oil margarine etc.

- **Marketing chain Improvement**

Marketing channel improvement stimulates its production and further raise incomes and living standards.

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Appendices

1. Questionnaires

A Questionnaire Prepared to Explore the Role of Butter Production and Marketing in the Livelihood of Rural Communities in Kucha Woreda of SNNPR

Prepared by *Fikru Hailegiorgis /+251911077016 /hgfikru@gmail.com*

Objective *for an MA Thesis Fulfillment in Rural Livelihood and Development in Addis Ababa University College of Development Studies*

Tips before you start to interview your informant

1. *Greet your respondent*
2. *Tell him/her your name*
3. *Tell him/her why do you make this survey*
4. *Start your interview whenever the respondent is voluntary*

Identification Number (Code) ____
Cluster _____
Name of enumerator_____
Date of interview
____/____/____

I. General Information

Name of the respondent _____ Kebele_____

Distance from Woreda Center ____km

1. Age of respondent ----------
2. Household head 1= Male 2= Female
3. Sex 1= Male 2= Female
4. Marital status 1= Single 2= Married 3= Divorced 4=Widowed
5. Religion 1= Orthodox 2= Muslim 3=Protestant 4=Others_____
6. Education level 1= No schooling 2= Can read & write 3= Primary school (grade 1-8) 4= Secondary school (grade 9-12) 5= Higher education
7. Family size ----------
8. Household head 1= Male 2= Female

9. Housing type 1= Grass thatched up to ground 2= Grass with established wall 3= Corrugated iron sheet

10. Agro-ecology Zone 1= Kolla 2=Wioina Dega 3=Dega 4=Wurch

11. Farm size (in *hectar*) 1= Arable land_____ 2= Grazing land _____

12. Livelihood Systems 1= Livestock production only 2= Mixed farming 3= Trading 4= Apiculture 5= others, specify_____

13. Working Capital (for traders only) _____ ETB

14. Annual household income in birr _____ ETB

15. Number of livestock owned at present

S/no	**Livestock**	**Crossbred**	**Local breed**	**Total**
1.	Oxen			
2.	Cow			
3.	Calves			
4.	Sheep			
5.	Goats			

16. Asset Holding

S/no	Asset	Yes	No
1.	Residence Home		
2.	TV/Dish/DVD		
3.	Radio		
4.	Telephone		
5.	Refrigerator		
6.	Motor/		
7.	Car		
8.	Donkey/horse Cart		
9.	Tractor		
10.	Water Point		

II. Dairy Production, marketing and division of labor in dairy related activities. (2003/04 E.C)

17. Do you participate in butter marketing? 1= Yes 2= No

18. How many years since you started producing and marketing butter? 1= Less than a year 2= three years 3= five years 4= ten years 5= more than ten years

19. If yes, for how long you sold milk in 2003 E.C?

    1= For the whole year 2= For half a year 3= For 9 months

    4= For 3 months 5= Only for a month 6= Others----------

20. If yes to Q# 15, please specify the main reasons why you sell butter? /Give ranks/

    1. To get additional income for the purchase of dairy and other agricultural inputs
    2. To send my children to school
    3. The income helps me to fulfill household expenditure
    4. To guarantee my participation in community based saving association
    5. Others (specify) _____
    6. If yes, fill the next table

Cows	No. of dairy cows	No. of milking cows	Lactation Period in days	Average Milk yield per day In liters	Amount of milk used for butter processing per week in liters	Average home consumption (per week) Butter/kg	Average kilogram sold (per week) Butter
Local cows							
Crossbred Cows							
Total							

21. Do you sell milk products other than butter such as cheese, sour milk, defatted and/or whey? 1= Yes 2= No

22. If yes the total amount of its return per week? _____ ETB

23. How do your products enter the market?

1= I directly take it to the nearby market

2= I directly sell it to marketing agents/ local assemblers/ small scale traders

3= I directly sell it to hotels and restaurants

4= If other, please specify_____

24. If you directly take it to nearby market, where is that? _____

25. Are there butter and/or milk producing and/ or marketing cooperatives or associations in your locality? 1= Yes 2= No 3= I don't know

26. If yes, are you a member of that cooperative or association? 1= Yes 2= No

27. If yes, what benefit have you got from that cooperative or association?

_____

28. How long/ how far does it take for you to reach the market? _____ km/____hrs

29. How long does it take for you to reach all weathered road? _____ km/ ____hrs

30. For how many birr currently do you sell a kilogram of butter? _____ birr

31. What is total annual income of butter? _____ birr

32. What is the total cost of production of butter? _____ birr

33. How often do agricultural extension workers visit you?

1= Once or more in a week 2= Once in fifteen days

3= Once in a month 4= Sometimes in a year 5= Never

34. Have you got any support from government and/or NGO development agents concerning butter production and marketing so far? 1= Yes 2= No

35. If yes, please specify? _____

36. Have you got any credit from government and/or NGO microfinance institutions for butter production and marketing? 1= Yes 2= No

37. If yes, is that helped you to improve your production and marketing?

1= Yes 2= No

38. How do your cows get feeding? 1= Group feeding 2= Fenced grazing

3= Home feeding

39. Why do you think is the reason for the high demand for the butter of Kucha?

_____

40. What are indigenous butter production techniques in Kucha?

_____

41. What are the indigenous butter value adding techniques which maintain quality of the butter produced?

1. _____

2. _____

42. What indigenous techniques do you use to preserve and maintain the quality of butter production/how long does it stay?

1. _____

2. _____

43. Labor division in the management, operation and marketing of dairy related activities

S/n	Activities	Men	Women	Together
1.	Livestock Purchase and Sale			
2.	Butter Production and Sale			
3.	Handling Butter Income			
4.	Deciding over Income from Butter			
5.	Purchase of other home utilities			

44. Who supports you in your dairying activities? 1= No one/only my husband and me/ 2= My children and other relatives 3= Employed workers/laborers

III. Food Security

45. Have you been included in the government PSNP? 1= Yes 2= No

46. Current Status 1= Still in PSNP 2= Graduated

47. If Yes, for how many years? for_____ years

48. How many birr per month? ____ birr/month or/and _____kg of grain/month

49. Is there any contribution of PSNP for butter production and marketing?

1= Yes 2= No 3= I don't know

50. If yes in what way please specify? _____

51. Weekly food consumption- Only put √ mark in the box

Food Items	Week Days																				
	Monday			Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday		
	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D
Maize/Maize porridge, sorghum, bread and other cereals																					
Cassava, potatoes, sweet potatoes																					
Beans, peas and ground nuts																					
Vegetables and leaves																					
Fruits																					
Beef, goats, poultry, egg and fish																					
Milk yoghurt and others																					
Sugar and sugar Products																					
Oils and fats																					
Condiments																					

Where B=Breakfast L=Lunch D=Dinner,

According to the WFP computations, FCS of this household=_____

IV. Problems and Constraints

1. How many kilometers or hours you need to travel to get the following? (On foot)
    1. Market _____kms or ____hrs
    2. Large Consumers (Hotels, cafeterias, etc) _____kms or ____hrs
    3. Traders _____kms or ____hrs
    4. Extension Service _____kms or ____hrs
    5. Veterinary Service _____kms or ____hrs
2. What are the dominant grass species or tree leaves that grow in your locality?
    1. _____
    2. _____
3. Which of these are important to feed your milking cows, so that they enhance both quality and quantity of both milk yields?
    1. _____
    2. _____
4. What are the major butter production constraints you face? /Rank them/
    1. Inadequate availability or lack of feeds, grazing land and water points
    2. Low productivity of indigenous cattle breeds
    3. Animal diseases/health related problems
    4. Market price fluctuation
    5. Unable to get market information
    6. Lack of infrastructures such as road
    7. Distance from extension and veterinary centers
    8. Low demand of butter during fasting seasons
    9. Spoilage of butter during transportation
    10. Others, please specify_____

5. What are the solutions to tackle the above problems and enhance productivity?

_____

6. What are the major butter marketing constraints you have observed?/Rank them/

    1. Price fluctuation
    2. Distance of butter collection centers from home
    3. Lack of getting adequate market especially during fasting time
    4. Adulteration
    5. Lack of infrastructures
    6. Access to credit and saving
    7. Absence of butter trading cooperatives or unions
    8. Others, please specify_____

7. What are the solutions to tackle the above problems and make marketing efficient? _____

8. What is expected from stakeholders?

    1. Government_____
    2. NGOs_____
    3. Producers_____
    4. Traders_____
    5. Consumers_____

Thank Your Informant!

Themes of the Focus Group Discussion

1) What are the reasons for specialty of the butter of Kucha?
2) What are the indigenous butter production, value addition and preservation techniques that are traditionally practiced in Kucha?
3) How could the production and marketing of butter contribute to women economic empowerment in Kucha?
4) How could the production and marketing of butter contribute to food security in Kucha?
5) What are the problems that affect both the quality and quantity of production and marketing of the butter of Kucha?
6) What solutions needs to be done in order to promote butter production to increase productivity both in terms of quality and quantity and to make marketing more efficient so that to make smallholder producers more beneficiary, create a conducive marketing system to help itinerant traders and satisfy the needs of consumers?
7) What is expected from stakeholders? Such as government, NGOs, producers, traders, consumers
8) Way forward.